

THE TECH

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"THE NEW TECHNOLOGY"

In spite of the tireless efforts of President Maclaurin, the Corporation of the Institute and many prominent graduates and other influential men of Boston, a definite decision as the new location of Technology is yet to be reached.

For a long period of time—ever since the price of land in the Back Bay district has made it impracticable for the Institute to buy there—it has been a certainty in the minds of all connected with the Institute that sooner or later it would be necessary to move to a new site. When Dr. Maclaurin was called to the president's chair, two years ago, he, immediately realized the seriousness of the situation, started a vigorous campaign with a new Technology as the goal.

Although the reasons for moving will seem ancient history to all directly connected with the Institute they will be briefly summarized. At the present time

campus, with the Walker Memorial, the fraternity houses, and large dormitories surrounding the athletic field, all within a radius of a half mile, the efficiency, scope and influence of the Institute would be increased by an untold degree.

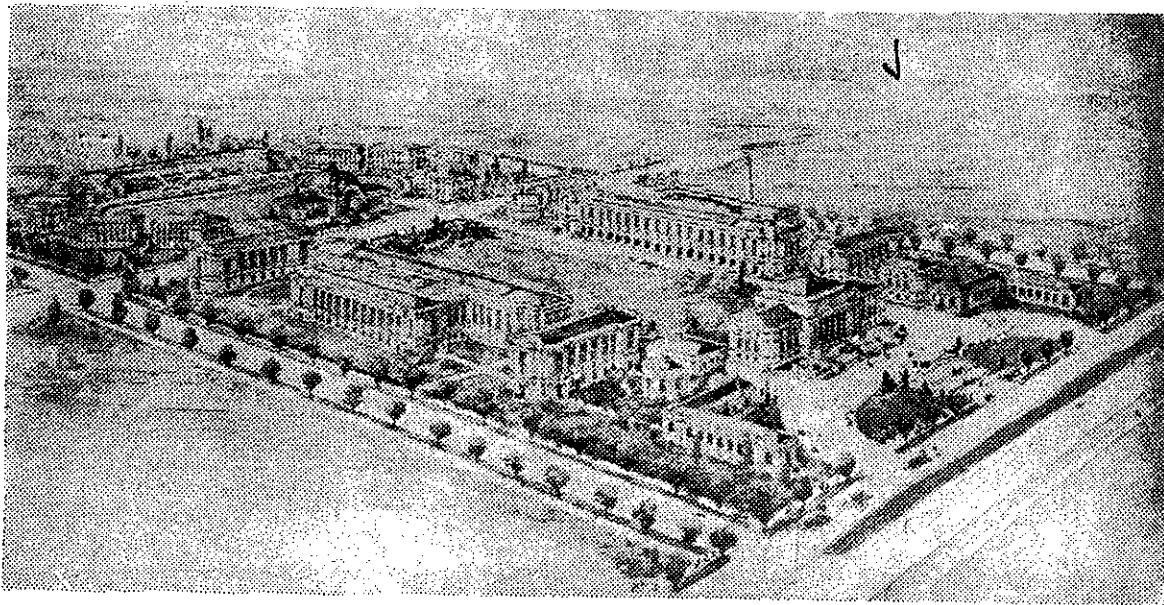
The question of the Institute's moving has been definitely and affirmatively settled; Tech *will* move, it will move soon and to a site close to the city limits of Boston. All that remains is the final selection of some one of the many places that have been offered as possible locations for the new Technology. The Corporation has considered more than forty different sites, each of which has certain advantages, but the question of price is the all-important one at present and is the one which will govern largely the final selection.

In spite of the fact that the site has not been definitely decided upon, the

Professor Rotch of Architectural Design at the Institute. This accompanying plan shows this arrangement in a general way, and while it can not be regarded as final, still it serves to show the ideal that the Corporation is trying to reach. The buildings have all been laid out according to specifications submitted by the heads of the different departments and are all drawn to a practical working basis. The buildings will be of the most modern type, constructed of reinforced concrete and brick.

They are not to look in the least like "factories or garages," nor on the other hand will they have any highly ornate appearance, but they will be built on a design that will harmonize thoroughly with the idea of a school the size and importance of Technology.

The plot of land, wherever it may be will be divided into two parts, the larger



the problem of caring for fifteen hundred students in an engineering school which has such a limited amount of land, and of maintaining the high standard which the Institute has always held, is one which taxes the officers of the Institute to the utmost. If it should continue to grow in numbers and size of equipment, the maximum will soon be passed and it will be absolutely necessary to either lower the standard and the efficiency of the school or relocate on a much larger situation.

There has long been a question in the minds of many of the friends of the Institute, why the Rogers and Walker Buildings are not removed and the additional space utilized by larger buildings which would cover the entire area. This can be easily answered by an explanation of the term "abutter's rights" which appears in the old deeds for the property in that vicinity. This states that there shall be only a certain amount of the block owned by the Institute covered by buildings and that this ratio between open and covered ground shall not be changed by the courts at any later date. In brief, the Institute buildings now cover all the allotted ground and they can not be enlarged.

Another and very vital consideration is that of the lack of dormitories at the Institute as it exists today. There is absolutely nothing of the kind of any size, and the students have nothing to bring them in touch with one another. On the new site where there will be enough land available to allow a well designed grouping of the buildings around the

PROPOSED NEW TECHNOLOGY

preliminary plans for the arrangement of the new buildings have been drawn up by Professor Despradelle, one of the foremost architects in the country and

of about twenty-five acres, will be laid out with the regular buildings of the Institute surrounding a quadrangle or

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CALENDAR

Monday, April 10

- 1.00 Classes suspended for remainder of the day.
- 9.00-1.00 Fraternity Smokers and Receptions to Alumni.
- 1.00 Convocation in Huntington Hall. President Maclaurin will address the student body.
- 2.30 Opening session of the congress in Huntington Hall. Open to the public. Address by Pres. Richard C. Maclaurin.
- 2.30 General Field day at Tech Field.
- 6.00 Alumni Class dinners. For time and places see list below.
- 8.00 Anniversary smoker in Symphony Hall.

Tuesday, April 11

- 9.00-11.00 Inspection of Buildings and Equipment of the Institute. Open to the public.
- 11.00 Classes suspended for remainder of the day.
- 11.00-1.00 and 2.30-4.30 Technology Congress.
- 7.00 Subscription Banquet in Symphony Hall.

Wednesday, April 12

- 6.30 Joint Professional Societies Dinner, Union.

Where the Graduate Classes Will Dine

- '75 Headquarters at the Thorndike.
- '77 Westminster Cafe, 6 o'clock, a la carte.
- '78 Westminster Cafe, 6 o'clock.
- '83 City Club, 6 o'clock.
- '84 City Club, 6 o'clock.
- '85, '86, '87 English Room, Hotel Thorndike, 6 o'clock.
- '89 Hotel Thorndike, 6 o'clock.
- '91 English Room, Hotel Thorndike, 6 o'clock.
- '92 English Room, Hotel Thorndike, 6 o'clock.
- '93 Boston City Club; private dining-room, 6 o'clock.
- '94 Copley Square Hotel, 6.30 o'clock.
- '95 City Club, 6 o'clock.
- '96 Wirth's Restaurant, 35 Essex St., 6 o'clock.
- '98 City Club, 6.30 o'clock.
- '01 American House, Rathskellar, 6 p. m.
- '02 City Club, 6.15 o'clock.
- '03 Hotel Brunswick Cafe, 6.30 o'clock.
- '04 Copley Square Hotel, 6.30 o'clock.
- '05 Cafe Bova, 95 Arch St., 6 o'clock.
- '06 Copley Square Hotel, 6.30 o'clock.
- '07 Technology Club, 6 o'clock.
- '08 Hotel Westminster Cafe, 6 o'clock.
- '09 Hotel Plaza, 6 o'clock.
- '10 Hotel Plaza, 6 o'clock.

THE FIRST CONGRESS OF TECHNOLOGY

Today is started the first Congress of Technology because, with General Francis A. Walker, "We believe that in the schools of applied science and Technology as they are carried on today in the United States, involving the thorough and most scholarly study of principles directed immediately upon useful arts, and rising in their higher grades, into original investigation and research, is to be found almost the perfection of education for young men."

To show our reason for this belief, 60 of those who have been connected with the Institute have been gathered together to show how the Institute leads to practical solutions of present day problems.

The reason this Congress comes at this time was that on April 10th, 1861, Governor J. A. Andrew signed the "Act to Incorporate the Massachusetts Institute of Technology." The main provision was that "William B. Rogers, James M. Beebe, E. S. Tobey, S. H. Cookin, E. B. Bigelow, M. F. Ross, J. D. Philbrick, F. H. Storer, J. D. Runkle, C. H. Dalton, J. B. Francis, J. C. Hoodley, M. P. Wilder, C. L. Flint, Thomas Rice, John Chase, J. P. Robinson, F. W. Lincoln, Jr., Thomas Aspinwall, J. A. Dupee, E. C. Cabot, their associates and successors, are hereby made a body corporate by the name of the Massachusetts Institute of Technology, for the purpose of instituting and maintaining a society of arts, a museum of arts, and a school of industrial science, and aiding generally, by suitable means, the advancement, development, and practical application of science in connection with arts, agriculture, manufactures, and commerce."



Prof. CHARLES F. PARK, Chairman.

The first memorial to the legislature incorporated the idea of museums for the sciences, but with the development of the subject the museum idea has become subordinate to the idea of the school of industrial science. After the heavy trials assumed by President Rogers in overcoming financial difficulties made unusually hard because of the civil war, the Institute finally started operation in 1865.

The original reason for the establishment for the Institute has been proved exactly as it was stated by its founder, when he said, "In the existing competition of manufacturing, commercial and agricultural pursuits, such a special training in practical science has become indispensable if we would hope to maintain a prosperous career and the busy enterprises and inventions of the leading European nations." As is the case with

Continued on page 2

THE ALUMNI REUNION

Interwoven in the character of this Congress of Technology is something far stronger and penetrating than appears on the surface. Technology alumni from the four corners of the earth will gather together during the two days session to refresh remembrances and renew long broken ties. It will be an alumni reunion in the literal sense of the word.

When the Alma Mater issues an urgent call to its thousands of loyal sons—the response is instantaneous and unanimous from that great body of men—30,000 strong—whom have gone out from Technology—promoting, uplifting, and developing the welfare of humanity.

The first official alumni smoker will be held in Symphony Hall at 8 o'clock Monday evening, April 10th. As usual the entire auditorium will be given over

ners, meetings, and smokers, by the different fraternities of the Institute. Monday morning has been set aside for this phase of the festivities of the alumni.

Thousands of the Tech "grads" will be merry during the two days of this jubilee and ample provisions have been made by the different class secretaries so that all can get together once or twice during the two days of the Congress.

Ten-day banquet of graduating classes will be held as follows:—

Class 1875, Hotel Lenox, 6:00 P. M.; 1877, Westminster, 6:00 P. M.; 1878, Westminster, 6:00 P. M.; 1883—1885, Thorndike, English Room; 1887, Thorndike, English Room; 1891—1892, Thorndike; 1893, City Club; 1894, Copley Sq.; 1895, Boston City Club; 1896, will join class of 1895; 1898, Boston City

TECHNOLOGY CONGRESS

(Continued from page 1)

any successful undertaking it is the energy of one man which puts it through. This man was William Barton Rogers who sacrificed his health for the establishment of the Institute, chiefly known through its activities as a School of Applied Science. The first suggestion of the principle is embodied in the first memorial presented to the legislature in January 1860 drawn up by President Rogers, in which he says:

"A comprehensive Polytechnic College which would put in practice a complete system of industrial education supplementary to the general training of other institutions, and fitted to equip its students with every scientific and technical principle applicable to the leading industrial pursuits of the age." The Institute has shown itself eminently capable of this application to the industrial pursuits of the age as will be shown in these papers by the alumni. Among those who have become more generally appreciated may be mentioned Dr. George E. Hale, whose astronomical work at the Mr. Wilson observatory has placed him at the head of his profession. There is Allen Hazen and George C. Whipple of New York, the former of whom has been connected largely with the large construction problems such as the Panama Canal. Whipple has become famous as one of the great sanitary engineers of the country. Others that may be mentioned are Professor George F. Swain, who has been identified with the conservation question; John Freeman, who has been identified with the reclamation in the west; the firm of Stone and Webster having on its staff a large number of Tech graduates who have made the name of the firm prominent throughout the whole of the country in the organization and construction of electric railway systems. It is impossible to even begin to give a partial list of the successful Institute graduates. Ten thousand men have come to the Institute and have carried away from it the principles of scientific thinking, which has led them to success in all lines of industry from that of a dealer in athletic goods to president of railways.

To-day the Institute is turning out graduates in 14 separate courses. With so many different branches it seems impossible that they can all be thoroughly successful. Such is the case shown by the alumni now present to give their experiences.

In breaking away from the so called classical scheme, the Institute did not adopt a narrower principle of specific detail. It did not turn away from culture but sought to develop it by an appreciation of the principles of science inspired by the zeal for their application to human nature. Therefore we find coupled with investigation into natural laws, an investigation of a general nature in economics, history, and language. The principle reason for the success of Institute graduates however, can be laid to the fact that it is first the individuality of the man himself that is developed. After having been given the principles he is left to his own devices in their applications in the laboratories;—the responsibility is put right up to the man and he must develop the nerve to go ahead with the courage of his convictions.

One of the notable things about the professional work at the Institute is that it can not be characterized as boy's work with toy miniatures. Instead of this, it is life size realities, that are at the disposal of the students. The full size brick arch experiments are illustrations of this point. Conditions are made as much like those found in the world as they can be within the limitations of space and circumstances in the present buildings of the Institute.

President Walker said the Institute trains by "subordinating the acquisition of the knacks of a trade and mere technical devices to the study of principles." This study is largely confined to the recitation or lecture rooms and is, wherever possible, made to precede the laboratory.

Although it is true that naturally the men who take a specific course will have more data at his hand for his profession, if he takes up a profession of the same name, it is also true that the success of Institute's graduates does not seem to depend so much upon the mass of facts which they have accumulated while at the Institute but rather upon the method of scientific thought which they have developed as President Walker expressed it, it is the ability "To do the next thing."

As President Rogers expressed it. The "education which we seek to provide, although eminently practical in its aims has no affinity with that instruction in mere empirical routine which has sometimes been vaunted as the proper education for the industrial classes. We believe on the contrary that the most

truthful practical education, even in an industrial point of view is one founded on thorough knowledge of scientific laws and principles, and which unites with habits of close observation and exact reasoning a large general cultivation."

The final accomplishment of the training at the Institute as outlined above is not that engineers, architects, or scientists will be turned out, but rather that they will be started on the road to becoming scientists, architects, or engineers. The Institute realizes that its graduates have but begun their work. To become worthy of the name, to be recognized by the profession as really worthy to bear the title is the crowning achievement of years of earnest endeavor and self sacrificing study. The first four or five years but serve to start the man upon his career. He is given the proper attitude towards his profession; he is made familiar with the great principles of art and science which are to become the foundation of his professional knowledge and development. He is given facility in the processes that he must use in his expression of his imagination and his thought, and is familiarized with the sciences and their applications by which his creations will be made realities. He is taught logic and the reasonableness in all true endeavor, and his taste, and his powers of discrimination between bad and good are developed.

After a half a century of experiment, the Institute is now well recognized as playing an important part in the community welfare by those who are fortunate enough to be associated with her graduates. To give those who have not had this association some idea of the value of Institute work, the present Congress has been assembled.

In six separate sections holding sessions at the same time will be considered the various aspects of the work of the Institute. The first of these will be "Scientific Investigation and Control of Industrial Processes" led by Professor W. H. Walker, Chairman. The second is "Technological Education in its Relation to Industrial Development," Chairman Dr. A. A. Noyes. Third "Administration and Management," Chairman D. R. Dewey. Fourth, "Recent Industrial Development," Chairman D. C. Jackson. Fifth, "Municipal and Industrial Sanitation," Chairman W. T. Sedgwick. Sixth "Architecture," Chairman F. W. Chandler. In each of these sections will be presented from three to ten papers pertaining to the subject.

To-day is an epoch in the history of the Institute. The period of experimentation has passed. It is now necessary to expand and enlarge our forces and equipment if we are to keep in the front rank of usefulness to the community. This can only be done by the proper appreciation on the part of the community to whom direct financial benefits accrue of the work of the Institute. Then it will be that they will feel called upon to contribute their share to the enlargement of the Institute on a new site with better capabilities for work. This Congress has been called for the specific object of imparting to the city, state, and country to some degree the value of Institute training. The papers which have been presented are not only for the day, they will be saved and presented throughout the country in the various technical journals at a later date, and will always be kept as a treasurer of the Institute, marking its first 50 years of achievement. The list of subjects as they are arranged in sections follows

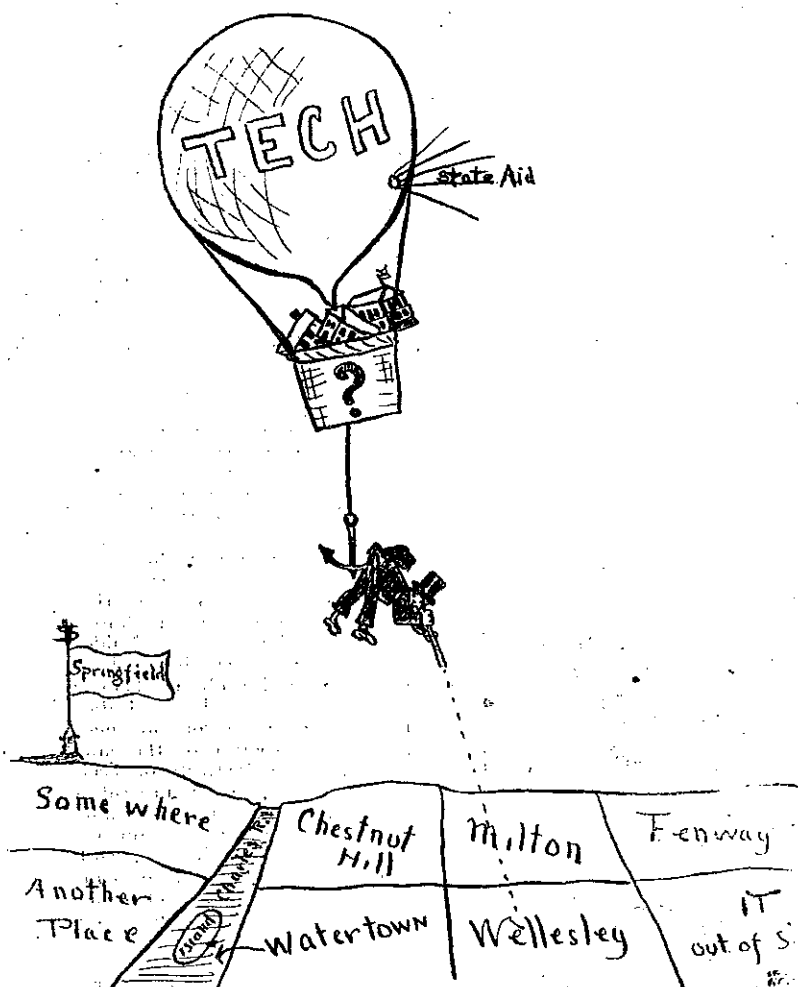
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RECORD OF TECHNOLOGY

In an article published in the Popular Science Monthly a few years ago, Professor George F. Swain summarized the claims of the Institute to recognition as a leader in the development of technical education as follows:—

"It was the first school in the world to institute laboratory instruction in physics and chemistry to students in large classes as a part of the regular course of each candidate for a degree; the first to equip a mining and metallurgical laboratory for the instruction of students by actual treatment of ores in large quantities, the first to establish a laboratory for teaching the uses and nature of steam, and a laboratory for testing the strength of materials of construction in commercial sizes; and the first in America to establish a department of architecture. Later still, it was the first school in America to establish distinct courses of study in electrical engineering, in sanitary engineering, in chemical engineering and in naval architecture."

I WONDER



WHERE ?

to Technology. Alumni, guests and seniors will be seated at tables on the floor, while the galleries will be reserved for ladies and lower classes. One of the unique features of this smoker will be the display of moving pictures showing some of the numerous stunts taken during "Stunt Day at Nantasket," on the occasion of the second Technology reunion on June 1909.

Besides the moving pictures there will be reproduced photographs of other famous Tech happenings and pictures from old Technique which will recall to each class the special grinds and past reminiscences of its own times.

In addition to this there will be a number of specialties somewhat in line of the "show" that was provided when the alumni held the big jubilee smoker of 1909 at Boston City Club. The Technology Glee, Mandolin, and Banjo Clubs together with the newly formed Orchestra will do their part and will join the Waltham Watch Co. band in leading the singing for the crowds of alumni—particularly the famous Stein Songs composed by F. A. Bullard 1887.

In conjunction with this Congress of Technology will be held numerous dinners: 1901, American House, 6:00 P. M.; 1902, Boston City Club; 1903, Cafe Brunswick, 6:00 P. M.; 1904, Copley Sq., 6:30 P. M.; 1905, Bovas Cafe, 6:00 P. M.; 1906, Copley Sq., 6:30, P. M.;

1907, Tech Club, 6:00, P. M.; 1908 Westminster, 6:00, 8:00, P. M.; 1909 Hotel Plaza 6:00, P. M.; 1910, Hotel Plaza, 6:00 P. M.

The monstrous banquet tomorrow night in Symphony Hall will be the largest and most enthusiastic entertainment ever given by Technology. Covers will be laid for 1,000 people among the guests and speakers will be Thomas A. Edison; George Westinghouse; Governor Eugene Foss; Mayor John H. Fitzgerald; John Freedman; Allen Hazen; Dr. George Hall; Dr. R. S. Woodward; Ex-Governor Eben S. Draper; Philip Stockton; F. W. Wood; president Maryland Steel Co.

It is expected that this banquet will be a memorable one in the annals of the Institute of Technology, the numerous announcements and addressed made tomorrow night will long live in memory of the loyal sons of Technology. The balcony will be open to ladies.

Tech Man Designs Highest Building

The tallest office building in the world is to be built in New York from the designs of Cass Gilbert, '78, architect. It will be a fifty-five story building between Barclay Street and Park Place. It will be 750 feet high, or about 50 feet higher than the Metropolitan Tower and nearly 100 feet above the Singer Tower. It will be exceeded by only one building in the world, the Eiffel Tower, 980 feet high. It will probably cost over \$12,000,000.

HISTORY OF THE INSTITUTE

By Harold M. Davis

A means of fulfilling the old economic law that the men necessary for the onward march of civilization in any given epoch are produced by that epoch, the Massachusetts Institute of Technology was founded in 1861. Because Massachusetts well-nigh devoid of natural resources, (the summer resort industry was not then begun) was growing to recognize more and more its utter dependency upon commerce and manufacturing for its high rank among the commonwealths, the old Bay State was chosen for the home of the new school and Boston, justly famous then as now for its culture and appreciation of things intellectual, was chosen for the definite site.

Back in 1846, fifteen years before the founding of the Institute, John Amory Lowell, first trustee of the Lowell Fund, asked Henry Rogers, brother to William Barton, to formulate for him a plan for a School of Arts to be established under the Kowell Institute Fund and in the ensuing correspondence between the two brothers was formulated the first plan for a "Polytechnic School in Boston." Restrictions to the Lowell Fund prevented any further action and the matter rested for some years. Meanwhile in 1847 and 1857 the Lawrence and Sheffield Scientific Schools were founded. For some reasons these schools failed to meet the demand and on February 18, 1859 there was held a meeting in the rooms of the Boston Society of Natural History. It was there recommended that a large portion of the still unfilled Back Bay be reserved for the school to be and a committee of seven was appointed to memorialize the legislature. This, the first of three petitions, failed because of the lateness of the date on which it was presented. With the second memorial, a bill was presented but, though backed by many educational and business interests, it was lost in the Senate. After many public meetings and much publicity a third memorial was presented and favorably received. Finally on April 10, 1861, on the very eve of the Civil War, the bill providing for the founding of the Massachusetts Institute of Technology was signed by the War Governor of Massachusetts, John A. Andrew.

It is interesting to note that this bill provided for three departments, a Society of Arts, a Museum or Conservatory of Arts, and a School of Industrial Science and Art. The first petitions had provided for immense museums and collec-

was secured but it was not until the very last day of this year that a gift of \$60,000 was received from Dr. William J. Walker, of Rhode Island, that just completed the necessary \$100,000. In 1865 a bequest of over \$200,000 was received from him.

In April, 1862, the Society of Arts began the meeting that have continued, without interruption, every winter. It was not until February, 1865 that the School of Industrial Science opened. Recitations and lectures were held in the building of the Mercantile Library Association on Summer Street and in the dwelling of Judge Jackson on Rowe Place. Students in those days were qualified "for the professions of the Mechanical Engineer, Civil Engineer, Practical Chemist, Engineer of Mines, and Builder and Architect." A general scientific course was given and an evening school was held. In the fall of 1865 the first annual catalogue was published and at that time there were 69 students and 10 professors—among the latter was ex-president Eliot of Harvard. In 1866 the School moved to Rogers Building which was then on the very edge of the made land of the Back Bay. In 1868 the first class—14 men—graduated.

imagination the founding and successful start. Born a Philadelphian in 1804, he received his education at the College of William and Mary where his father was Professor of Natural Philosophy. At the age of 24 William succeeded him. At 31 he accepted a similar chair at the University of Virginia and at the same time he became head of the geological survey of Virginia. By this time his reputation was international. He remained at the University until 1853 when he came to Boston having married, in 1849, Miss Emma Savage, a Boston girl. It was then that he took up the work of founding the Massachusetts Institute of Technology.

John Daniel Runkle, who was elected to the presidency upon Mr. Rogers' retirement, was born in Root, N. Y. in 1822. In 1851 he graduated from the Lawrence Scientific School. Before entering college, he had taught for several years and after graduating he became a member of the staff of the Nautical Almanac and founder of the Mathematical Monthly. In 1865 Mr. Runkle was elected to the first Faculty of the Institute and July 8, 1902 when he died senior professor of mathematics, he was the sole member of the original body connected with the Institute.

allurgy, Biology, and Physics. A gymnasium was built and a students' lunch room opened. The admission of women students was provided for. It fell to President Runkle to oppose successfully the first plan for the absorption of the Institute by Harvard.

The panic of 1873 nearly closed the doors of the Institute. The number of students and the annual contributions



JAMES M. CRAFTS

of merchants and manufacturers decreased to such an extent that for many months the future was in doubt. President Runkle broke down under the strain and President Rogers returned in 1878. He resigned again in 1881 with the Institute once more on its feet and while speaking at the graduating exercises, May 30, 1882, he died.

Francis Amasa Walker, third president of the Institute, was one of the greatest



WILLIAM BARTON ROGERS

These first years were critical in the history of the Institute. Massachusetts, naturally conservative, was thoroughly imbued with the influence of Harvard, the oldest college in the country, and Harvard had not then outgrown the old method of teaching. It was left to the Institute to introduce the laboratory method of instruction and it was difficult for the new idea to make headway. Said the first catalogue: "A high value is set upon the educational effect of laboratory practice, in the belief that such practice trains the senses to observe with accuracy and the judgment to rely with confidence on the proof of actual experiment." The Faculty has always maintained that the student should prove for himself where possible the facts about which he was studying and it is this policy that has done away with the old "wholesale" method of teaching, that has caused intimate personal relations between teachers and pupils.

Carlyle said, "the true university of these days is a collection of books" but the Institute has said and proved that the true university is a laboratory and even the Institute libraries are so used.

His health failing him under his tremendous burdens President Rogers was obliged to resign in 1870. It is very difficult to realize after these years just how much the Institute is a debtor to the man William Barton Rogers. In spite of poor health, an indefatigable worker of rare wisdom and tremendous intellectual capacity, to his genius was due the conception of the Institute and to his boundless energy, courage, and

Comparable in its scope with the laboratory method of teaching, the Institute, under the leadership of Mr. Runkle was about to make another bold experiment. Visiting the Centennial Exposition in Philadelphia in 1876 Mr. Runkle saw in the Russian shop-work exhibit an absolutely new idea. The student was the sole object of the Russian system and the work was planned along that line whereas the American system had always aimed to perfect the student in the making of some one machine. Returning to Boston, President Runkle established a School of Mechanic Arts. For many years it was subsidiary in character in order that young men and boys not connected with the Institute might have the benefit of the teaching. Thus the method was advertised and spread and in 1893 the city of Boston founded the Mechanic Arts High School. Since that time the old School of Mechanic Arts has served as a Shop Laboratory.

There were many other important events during this administration. In 1872 the laboratory of Mining Engineering and Metallurgy was founded. Planned by President Runkle and Professors Ordway and Richards, it was the direct result of the first summer school ever given at the Institute when President Runkle, five professors, and seventeen students made a long trip through some of the mines of the far west and southwest. In 1874 the Mechanical Engineering Laboratory was established. Laboratories in Microscopic Analysis and Industrial chemistry followed. Three new courses were started:—Mining and Met-



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RICHARD MACLAURIN, Pres.

men of his time. Born in Brookfield, Massachusetts in 1840 he graduated from Amherst and entered the Civil War at twenty-one as a private. "For bravery, clear-headedness, and maturity of judgment" he was rapidly promoted and retired at the end of the war a brigadier general. He taught Greek and Latin for a few years at Williston Seminary and became assistant editor of the Springfield Republican. He later became Chief of the Bureau of Statistics, Commissioner of Indian Affairs, and Superintendent of the ninth and tenth censuses. For nine years he was professor of political economy in Sheffield Scientific School. He is the author of several books on political economy and one text book.

The fifteen years of President Walker's administration were years of tremendous growth. The hard work of the earlier years began to tell and the number of

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FRANCIS A. WALKER

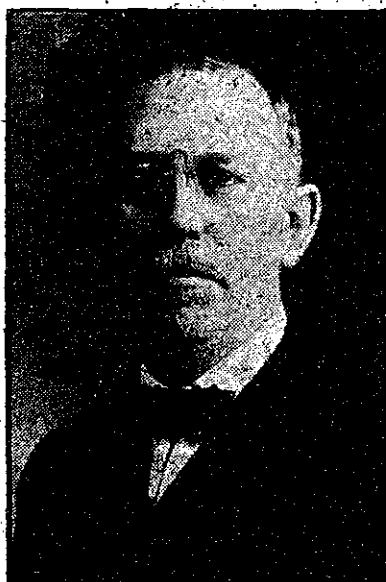
tions and courses of instruction played a minor part. The original correspondence between William Barton and Henry Rogers outlined for more closely the Institute as it is to-day in which the School of Industrial Science entirely predominates while the museums, originally so important, have sunk to the insignificance of (for instance) the collection passed by the Civil Engineering Department.

Another important proviso in the bill required that \$100,000 be raised in one year and this was the beginning of the financial trouble of the Institute which have continued down to the present time with the present prospect of continuing for years to come. At the end of the year a time extension of one year

MECHANICAL ENGINEERING

By Prof. Gaetano Lanza

In most industrial pursuits there are certain processes to be carried out and attention must be given to devising and preparing the means to doing this effectively and cheaply, to the best machines to be used for all the steps, a consideration of their efficiency, durability, first cost, the expenses necessary for their attendance, also for their maintenance, repairs, etc., to the construction and arrangement of the power plant, whether steam or water is used, to the system of



PROF. GAETANO LANZA

transmission, the design and construction of buildings adapted for the work, including foundations, water supply, drainage, heating and ventilating, light, lighting, fire protection, and a large number of matters of a similar character all of which are engineering problems. With

such questions the mechanical engineer is concerned, and his duties consist in solving problems of this kind as they arise. In order that he may be successful he needs: first, a knowledge of scientific principles and of the experience of the past, and second, his own experience. The latter cannot be imparted in a school, but each man must acquire it for himself subsequently.

Hence the function of the school is to give to the student knowledge and power to apply scientific principles, so that he may be able to make use of those which bear upon his particular work. Such a purpose is clearly outlined in "A Plan for a Polytechnic School in Boston," by Prof. William L. Rogers in 1846. (See Life and Letters of Wm. B. Rogers, pps. 420, et seq.) The first catalogue of the Institute was issued in 1865 and the first course in the list, then called Course I, was that in Mechanical Engineering.

A very large number of applications to engineering work are introduced, thus acquainting the student with current practice, with the problems that arise in the pursuit of his profession, and with the manner of applying to their solution not only the theory, but also the results of experiments, and this is considered a very important part of the instruction.

In addition to the professional studies a considerable amount of time is devoted to literary, historical, and economic studies with the view of giving the student a greater breadth, and to aid in making him a well-rounded man.

There is also another matter that is of the greatest importance to the prospective engineer, and that is, that he should be taught to perform original investigations inasmuch as the ability to conduct them is much needed by the engineer in the practice of his profession, and with this purpose in view, a thesis is required of the student before he can receive a degree, this thesis to consist of an investigation.

The investigations made in the laboratory, partly in connection with the regular

laboratory work and partly by means of the thesis work, may be classified as follows:—

- (a) Those made in the laboratory itself.
- (b) Those made in some outside plant.

In the case of the first, many have for their object the determination of results of value to engineers and manufacturers, and others engaged in industrial pursuits. The engineering laboratories are often the means of giving direct aid in solving industrial problems such as determining the efficiency of new devices, or the relative advantages of different methods of construction.

In the case of the second class, a part of the investigations are of so much value to engineers, manufacturers, and others, that in many cases the owners of the plant have furnished the use of their apparatus and have often spent considerable money to fit it up.

As to opportunities for work, it will be sufficient to say that, notwithstanding the number of graduates in mechanical engineering is very large, the total number of those graduated in this department being thus far, nine hundred and sixty-five, the demand far exceeds the supply.

FIELD DAY

By H. D. Williams

The Technology Congress "Field Day" will be held this afternoon at 2.30 P. M. at Tech field. A good list of events is in store for all who go out and no one can afford to miss it. The list of main events and the times they will be started are as follows:

- 2.30—Tug of War, 1911 and 1913 vs. 1912 and 1914.
- 2.40—All Stars Base Ball game.
- 3.15—Medley Relay Race between all classes.
- 3.30—2d Tug of War.
- 3.40—Base Ball game (finished).
- 4.15—Association Football game.
- Stunts (run off during entire afternoon.)
- 4.50—3d Tug of War (if necessary.)

Great enthusiasm has been worked up the past week and the Committee in charge promise a record day. The afternoon will start off promptly at 2.30 with a Tug of War between teams

chosen from the Senior and Sophomore classes against the Juniors and Freshmen. Great excitement is sure to accompany this event and some old time rivalry will break out and be brought to a close. Two all Star ball teams will furnish the next part of the program and take it from me, that the game is going to be a hummer. Each team has a great backing and it will be a chance of a life time to see a star game and hear all of Tech's "dyed in the wool" rooters. Come out and see a mid season game played by Tech men. Two umpires will officiate so as to leave no opportunity for any decisions to be questioned.

At 3.15 the medley relay race will be run off and something big in the way of running can be looked for. The race consists of four men on a team, each class to have a team. The first man will run a two-twenty, the second a quarter mile, the third a half mile and the last man will run a mile. Each class has a speedy quartet and it would not be surprising if a record were made. The best men in the Institute will run so it will be a chance for us all to size up our chances of winning the N. E. I. A. A. later in the Spring.

Directly after the Relay race, the second Tug of War will be held and the Base ball game will be finished. At 4.15 two picked teams will take the field and an Association football game will take place. The two teams are composed of fellows who have played the game before and a classy article of ball is looked for. The sports will then close with the third Tug of War which will be run off in case of a tie.

During the afternoon, various stunts will be put on and no one will find a dull moment in the whole day. Sack races, obstacle races and a Fat Man's race are possibilities. With such an interesting program it only remains for the student body to turn out as a whole in order to make the day a complete success and it can safely be said, that everybody will enjoy every minute. It is hoped that every student will make it a point to be on hand and if you are not actively competing come out and make yourself heard. Bring a horn, a cow bell or anything but whatever happens come out and have a good time.

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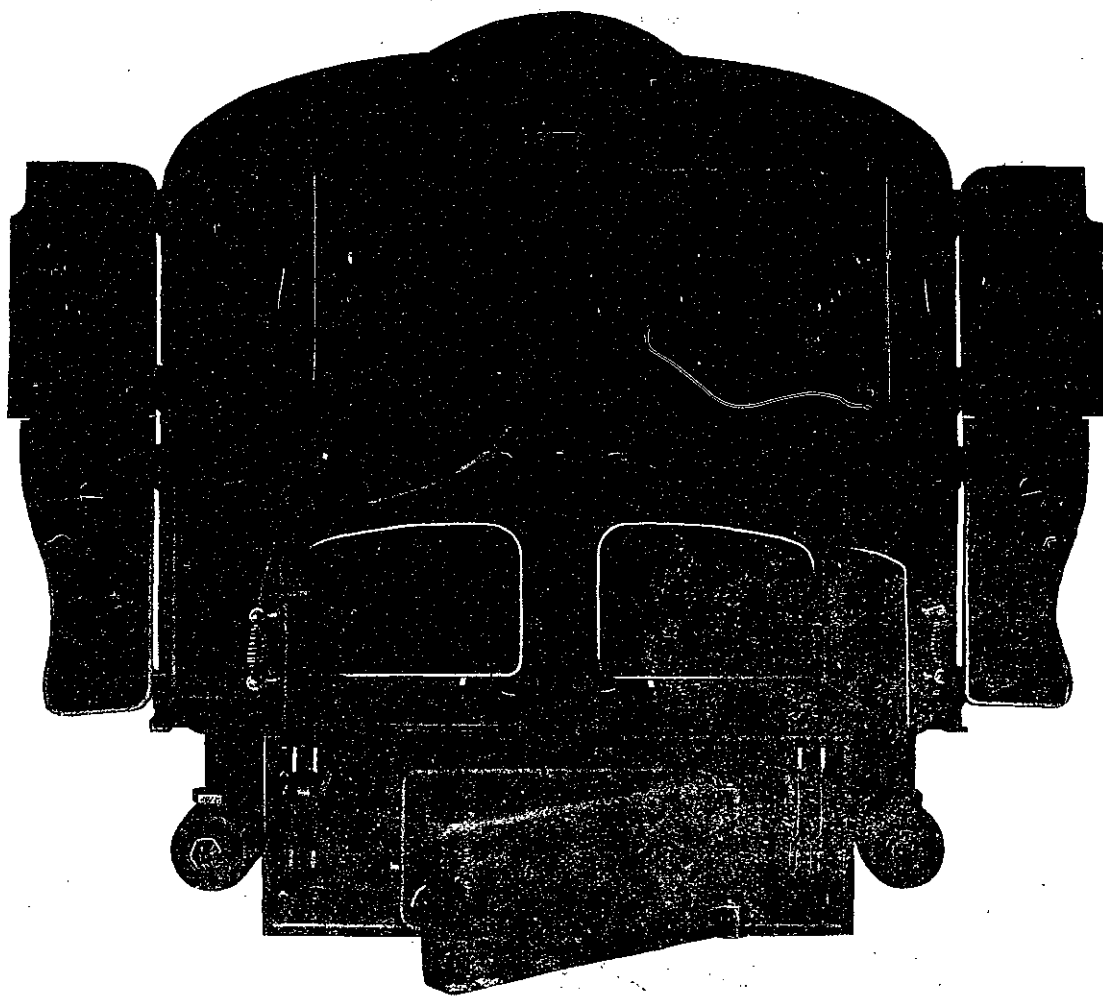
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TECH SHOW 1911 "FRENZIED FRENCH"



EDWIN C. VOSE, Co-Author



GENERAL MANAGER WILSON



COACH EUGENE SANGER



W. J. SELIGMAN, Co-Author

The thirteenth annual Tech Show is at last practically ready to be presented to the public which, it is hoped, will endorse the management in proclaiming thirteen one of the luckiest of numbers. Tech Show has been fortunate, this year, in nearly every direction. The play in itself is extremely commendable, and the success of its working out has even exceeded the expectations of the authors. The show has had the able direction of Coach Sanger and of Mr. Kanrich in the musical departments. Above all it has had the healthy and interested support of the student body of Technology.

Dick Wells, a young college student, and his sister, Ethel, are giving a house party with eight of their college friends as guests. As they are at a loss for means to provide entertainment, Ethel insists that Dick find something to amuse the crowd. In his search for excitement, Dick stumbles across an article in a newspaper regarding the deportation of sixteen French maids who have not the necessary money to allow them to enter the United States. Dick hits upon a scheme to get one of these girls and bring her to the house-party as a French countess. The male members

sals, so that the Show was able to start up earlier and still accomplish the same, if not better, results than in previous years. R. N. Doble, '12, H. D. Kemp, '12, C. P. Kerr, '11, and M. R. Pevear, '11 were numbered among the cast of "The Queen of the Cannibal Isles." E. G. Brown '13, was one of the chorus in the same production, and K. W. Faunce, '11, was a principal in "That Pill Grimm." J. M. Hastings, Jr., and F. H. Smythe are graduates of Hamilton College and are now taking special work here. They were both connected with the Hamilton dramatics during the whole time of their

Below is a list of the entire cast and chorus, together with the classification of the different men.

Members of the Cast

Richard R. Wells (known as Dick) Hero
Stanley H. Hodgman, '12
Bruce Carter, his Chum
Ralph N. Doble, '12
Philip Van Veen (known as Phil)
John H. Hastings, Jr., '12
Harry Havens, a Student
Kenneth W. Faunce, '11
Bill Boltwood, an Athlete
Donald C. Bakewell, '11
A. Watt, Dick's Butler
Edmund G. Brown, '13
Francois, from Bayside, a Chauffeur
Louis D. Florez, '11
Mr. G. B. Howe, from N. Y. Immigration Office
Francis Whitten, Jr., '14
Ethel Wells, Dick's Sister, Hostess
C. Phillips Kerr, '11
Dolly Carter, Bruce's Sister, Heroine
F. Hastings Smyth, '12
Helen Harding, athletic
Howard D. Williams, '11
Marjorie March, romantic
Munroe R. Pevear, '11
Louise Longwood, who flirts
Royal W. Wetherald, '14
Mrs. Thornton Steeres, the Chaperone
Karl D. Fernstrom, '10

Chorus

French Girls

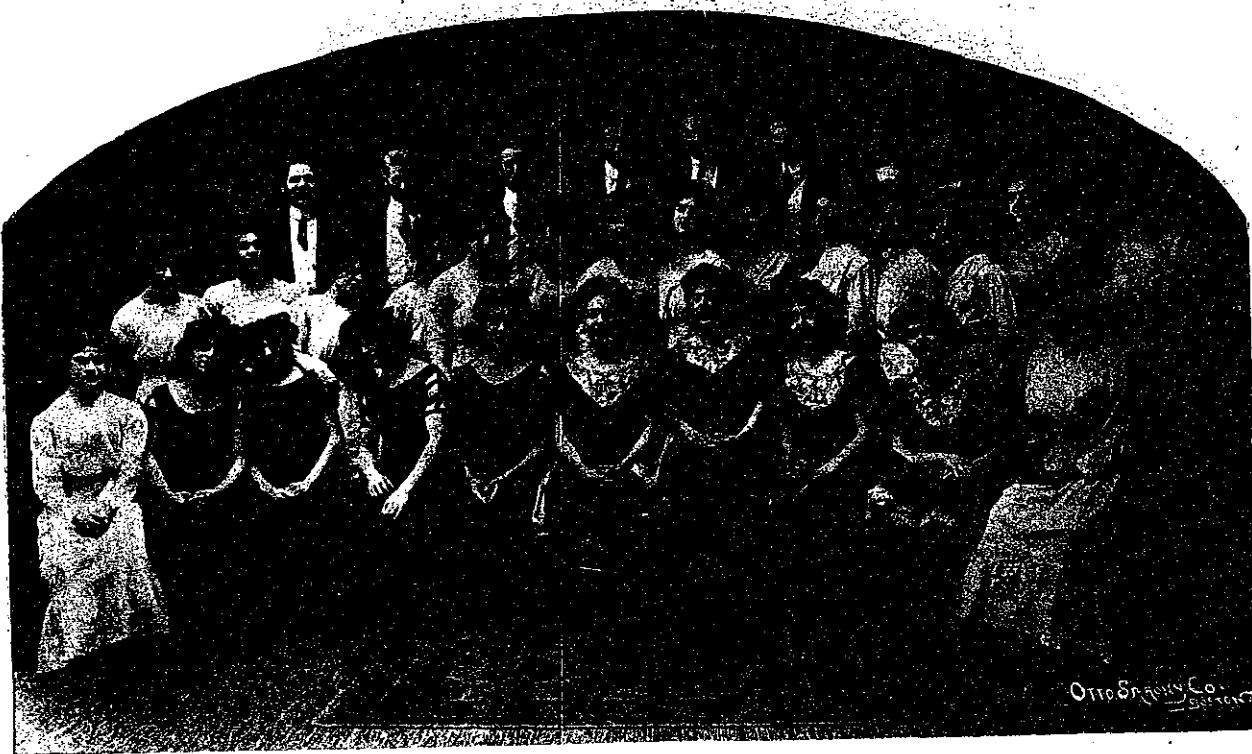
Adelbert D. Hiller, '14
Frederick P. Karns, '14
Carl A. Sandburg, '14
Henry O. Glidden, '13
Raymond E. Wilson, '12
James B. Chadwick, '13
Fred C. Hersom, '13
Arthur B. DeWitt, '14
Donald H. Van Deusen, '13
James Isaacs, '14
Walter J. Hauser, '14
Edward B. Sebben, '14
Everett B. Wettengel, '12
Alfred L. Higgins, '13
Howard P. Fessenden, '13
Harold H. Griffin, '12

Summer Men

Clarence K. Reiman, '12
Howard A. Morrison, '14
Conrad A. Markwald, '12
Geoffrey M. Rollason, '13
Louis W. Currier, '14
Ralph D. Salisbury, '14
William R. McEwen, '14
Stanley W. Merrill, '14

Summer Girls

Walter L. Whitehead, '13
Eric W. Mason, '14
Oliver C. Lombard, '12
Donald C. Crowell, '14
Lucius H. Graham, '14
Francis H. Achard, '13
James G. Russell, '13
Chester H. Ober, '14



SHOW CHORUS

"Frenzied French" is a three act musical comedy of the present day, written jointly by Edwin C. Vose, 1911, and Wellesley J. Seligman, 1911. Mr. Vose is well remembered by all for his co-authorship in "The Queen of the Cannibal Isles." His experience of last year has proved very valuable, enabling him to bring forth "Frenzied French" as a finished product truly worthy of the modern stage. Mr. Seligman has formerly been much more closely associated with track work than with any other student activity. As co-author of Tech Show 1911, however, he has evidenced the fact that his absence from the literary field has only been due to a former lack of effort in this direction.

The scene of the play is laid at a summer resort on Long Island, within easy reach of the Gay White Way. The show deals with the difficulties of a number of young college students who find themselves forced to mingle and converse with a number of French maidens who speak nothing but their native tongue. The French delivered by the college students is frenzied in the extreme, which explains the selection of the title for the play.

of the party are taken into his confidence and all together provide the necessary amount of money. This they give to the Wells' English butler with instructions as to the manner of carrying out their idea. As the time for the arrival of the young lady approaches, the boys, with the consent of Mrs. Steeres, the chaperone, tell the girls of the intended visit of the French countess. Intense excitement prevails, which is changed to consternation when, thanks to a conspiracy on the part of the butler and the chauffeur, sixteen fair French girls appear in the place of the one sent for. Numerous laughable complications, international as well as civil, arise, which terminate finally in favor of the hero, Dick, who is restored to the good graces of all. A love affair on the side adds a secondary plot to the show, and culminates in the proper musical comedy manner.

Tech Show 1911 has been very fortunate in having about half of its cast composed of men who have had previous experience in college musical comedy work, either at the Institute or at other schools. For this reason they have been able to do more efficient work in rehearsal,

connection with that university, and the experience which they have gained in this way has stood them in good stead in their work with the Tech Show.

As is usual, the chorus is about one-half freshmen, with juniors and sophomores dividing the other half about equally between them. Quite a number of these last were connected either with Tech Show 1910 or 1909 or both. A special feature of this year's chorus is the group of native French maids from gay Paris. There are eight of them, and they are the most captivating, vivacious and irresistible dames that Technology has seen for many a day. Each one can sing and execute Coach Eugene Sanger's intricate dances in truly professional style. Besides the French girls, there are eight Summer Men and eight Summer Girls, all sixteen being converted into English butlers later on in the progress of the performance.

TECH SHOW

(continued from page 6)

Tech Show is also to be congratulated on having secured as a coach this year Eugene Sanger. Mr. Sanger is a man well known in theatrical circles, having been connected with many of the most successful professional and amateur productions of the past few years. Among his best engagements may be numbered his connection with many of Mr. Daniel Frohman's best musical comedies; with The Triangle Club of the Princeton University; the Jest and Song Club of Union College, Schenectady, N. Y.; the Pi Eta and Delta Upsilon shows of Harvard University; the Columbia Club, New York City, and Barnard College of the same city. These few illustrations may serve to show Mr. Sanger's ability as a coach.

Lyrics by

Edwin C. Vose, '11
David F. Benbow, '12
Harold W. Barker, '14
Bartow V. Reeves, '12
William deY. Katzenberger, '13
Allen F. Brewer, '13
Nathaniel S. Seeley, '11
Foster Russell, '11

Last Sunday a big dress rehearsal was held at the Shubert Theatre, with results which can only be appreciated by those who looked on. The dialogue is bright and witty throughout the play, there being many places which are irresistibly humorous. The costuming is far more elaborate and effective than in "The Queen of the Cannibal Isles." The girls especially are made up in a manner to accentuate their several va-



TECH SHOW PRINCIPALS

Throughout this year's work, Mr. Sanger's plan has been to be with the men about three times a week and at that time instruct them in whatever dances or other stage business may be necessary, leaving the men themselves to practice and develop it under the supervision of the Stage Department of the Show Management. In this way Mr. Sanger has been able to devote his entire time to giving the men and the Show a proper stage presence. This plan has worked out admirably, and results have been much faster in coming and a great deal more satisfactory when reached than ever before.

Too much cannot be said for the lyrics and music for Frenzied French. Many of the songs deserve lasting popularity in musical circles. Each one has catchy words and a whistling tune, and all are easily adaptable to intricate dances. The Management looks forward to an unprecedented popularity for this year's score.

Many of those who have made this feature of the Show such a success are well known because of previous contributions to Tech Show. E. C. Vose, '11, one of the authors of this and last year's Show has contributed seven successful lyrics. D. F. Benbow, '12, did some work for Tech Show 1909, and B. V. Reeves, '12, wrote some lyrics for "The Queen of the Cannibal Isles." Nine of the lyrics were written by men of the senior class, two were contributed by juniors, while 1913 and 1914 were each represented by one each.

Orville B. Denison, '11, wrote the greater part of the music, contributing several songs and a couple of ensembles and finales. S. B. Putnam, '11, ran Denison a close second with five very good songs to his credit. Putnam and C. C. Pierce, '11, who comes from Princeton, have both done exceptionally good work this year, and it is to be regretted that they are to leave Technology without having an opportunity to write for next year's Show.

There are, however, many promising candidates among the under-graduates who tried out this year, who will doubtless contribute some good things in future.

The list of those who have contributed either lyrics or music follows:

Music by

Orville B. Denison, '11
Scott B. Putnam, '11
Clarence C. Pierce, '11
Randall Cremer, '12
Elisha N. Fales, '11
Joseph C. Fuller, '11

rieties of feminine beauty to the utmost and the effect is a remarkable cast of girls who are truly very good to look upon.

Mr. Kanrich's orchestration is as good this year as it was last, the only difference being that the fundamental material has been, if anything, a little better. If good music has anything to do with the success of a Show, there should be no doubt of the way in which "Frenzied French" will be received.

THE NAVAL ARCHITECTURAL SOCIETY

By S. H. Cornell

Course XIII began its separate existence in 1895, as soon as it was well under way the members felt the need of a society, and the class of 1901 organized the Naval Architectural Society in March 1900.

The object of the organization as then stated has remained with little change to the present time, namely, "to benefit the students in the course in both a professional and social way." This object is reached in much the same way as in the other professional societies at the Institute, by means of dinners, smokers, and trips to points of interest.

Of these trips the most important is the one made annually in Junior Week, under the auspices of the Department, to the yards of the Atlantic coast. The works of the Newport News Shipbuilding Co., The Maryland Steel Co., New York Shipbuilding Co. and William Cramp's, are all visited, as well as the Model Tank and Navy Yard at Washington. A short trip to Fore River completes the yards of the Atlantic coast. As a result all of any importance are visited in the course of a year.

The dinners of the Society have unfortunately of late years been few in number, at times only one a year. At the dinner of last fall the speaker of the evening was Naval Constructor Rock, who gave a most interesting account of the progress of ship building. A new proposition has come before the society recently, that of holding an informal smoker about the first of May, with no outside speakers present, but having the seniors of the society give short extracts from their theses so that instead of knowing but little about this work these may be made matters of general interest to the course.

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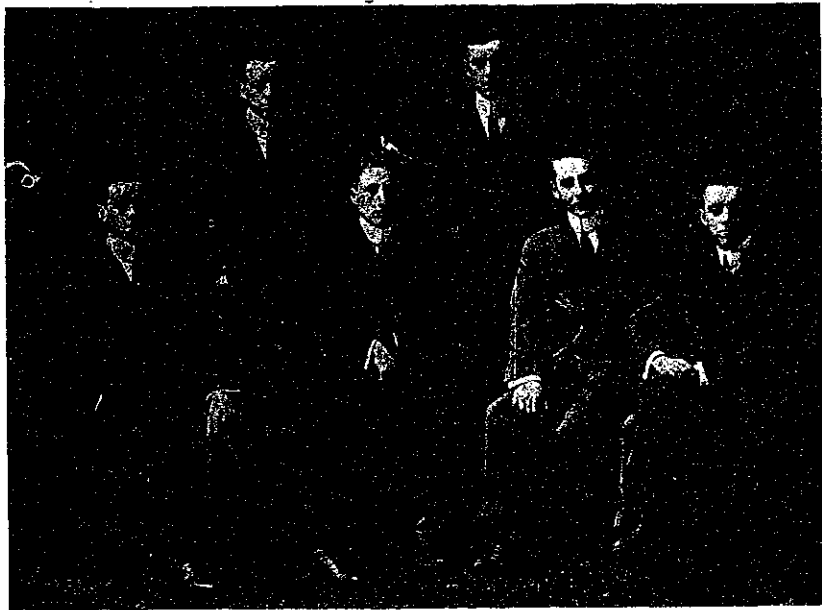
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THE JUNIOR PROM



JUNIOR PROM COMMITTEE

The Junior Promenade given by the Class of Nineteen Hundred and Twelve will be held this year at the Hotel Somerset on the evening of April twenty-first. As usual the Prom is the crowning event of the Junior Week and will occur on Friday night of the Spring Vacation. The programs have been selected and are being made by the E. A. Wright Company, of Philadelphia. They are of tasteful design on leather, and in the judgment of the committee are the best that could be secured within a reasonable figure. Poole's Orchestra consisting of twenty pieces, has been engaged for the occasion. It is considered the best in Boston and hence the music will be first class. The musical selections have been chosen from a large number, by experts, and the best have been secured. The ladies who have kindly consented to serve as matrons are

Mrs. Richard C. Macclaurin
Mrs. Eugene N. Foss
Mrs. George Wigglesworth
Mrs. W. Murray Crane.
The patronesses are:
Mrs. Alfred E. Burton

Mrs. Desire Despradelle
Mrs. Davis R. Dewey
Mrs. Dugald C. Jackson
Mrs. Gaetano Lanza
Mrs. Allyne L. Merrill
Mrs. Frank H. Rand
Mrs. Charles M. Spofford
Mrs. Henry P. Talbot
The Committee who have the dance in charge are as follows:
Edward Montgomery, *Chairman*
Henry Andrews Babcock
Rudolph Herzer Fox
Henry Donald Kemp
Frederick Johnson Shepard
Richard Parker Wallis
Following the usual custom, the Hotel Somerset has been selected as the scene of the Prom. It is not only centrally located, but is admirably suited for such a large social function. The ball room itself is beautifully decorated and is of such a size as to accommodate without crowding, two hundred and fifty couples—the number expected this year. The entire parlor space of the Hotel is to be at the disposal of the guests, and this

together with the balcony overlooking the ball room will afford ample room for the seating of all those present. A large service room, never before used at the Prom, has been secured this year to facilitate the serving of the supper which will take place during the intermission from twelve to one.

Another innovation this year is the elimination of extra dances, which, it is believed, serve only to confuse the dance order. To still further simplify matters it has been arranged to have a boy announce in each parlor the beginning of each dance. In this way mistakes as to the number of any particular dance will be eliminated. A reception will be held upon the floor from eight until nine and dancing will begin promptly at nine o'clock, and last until twelve, beginning again at one o'clock and lasting until four. There are thirty dances scheduled for the evening, allowing twelve minutes for each dance and intermission. The idea in thus making each dance somewhat longer than usual is to do away with the rush and crowding attendant with shorter ones. The dances will be alternate waltzes and two-steps with the eighth and twenty-third schottisches—the intermission for supper occurring between the fifteenth and sixteenth.

The committee are maintaining a desk in the Reading Room of the Union for the purpose of signing up men and giving out admission tickets, invitations, dance orders, seat numbers, and general information. A member of the committee is there every day from one until two and in addition to receiving subscriptions and distributing tickets, etc., he will register any man who so desires, in order to bring together men who have not completely filled their orders.

In order to make it easier for the men to locate each other before the dances, a seating arrangement has been designed. Every man will be provided with a number which refers to his seat in the ball room, and when making out his order will put down the number of the man to whom he has given the dance—if he is the higher number he goes to the other man's seat, thus effecting the exchange. If his is the lower number he will meet his next partner at his own seat. In order that this arrangement may be perfected, it is essential that house parties and other groups desiring adjacent seats hand in applications for the same at once.

The subscription this year, as formerly, is five dollars which includes admission

and supper for one couple. In case anyone desires to bring a chaperone the extra subscription will be but two dollars. By a special arrangement with the E. A. Wright Company it has been arranged to sell extra programs, both ladies' and gentlemen's, for a dollar a pair. This option of buying extra programs at the above figure is extended only to men who have paid their subscription to the Prom. Orders for these extra dance programs accompanied by payment will be received until Saturday evening, April fifteenth. Any member of the Committee will receive these orders or a note may be left at the Cage addressed to "Prom Committee."

H. A. BABCOCK.

MINING ENGINEERING SOCIETY

By M. A. Grossman

The Mining Engineering Society was founded about twelve years ago, with the hope that the members would derive benefit from it, socially as well as intellectually. The object of this society is first to bring together, in a social way, the members of Course III of the second, third, and fourth years, and second to give these men the privilege of hearing talks by men who have advanced themselves in the profession.

The society holds meetings about once a month. After the business meeting, the speaker of the evening, often a graduate of the Institute, is introduced. While the talk is usually on some professional subject, there are often interesting accounts of travels in foreign lands, made doubly interesting by lantern slides. The advantage of hearing professional and non-professional talks of this nature is often under-estimated. After the speech of the evening, the society adjourns for a social time, and incidentally, refreshments.

Until recently, the society was purely an Institute organization, but it has recently become affiliated with the American Institute of Mining Engineers. The A. I. M. E. has kindly extended many privileges to the members of the society.

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HISTORY OF THE INSTITUTE

Continued from Page 3

students increased from 300 to 1,500, the number of professors from 39 to 153. Three large buildings were built—Walker, Engineering A, and Engineering B. Four new courses were established: Electrical Engineering, Chemical Engineering, Sanitary Engineering, and Naval Architecture. The first number of the Technology Quarterly was issued in 1887 and the Technology Club was founded in 1896.

and astronomy in Washington University, St. Louis, and as head of the U. S. Coast and Geodetic Survey. It was his record in this latter administrative position that led the Corporation to elect him to the Presidency of the Institute. He resigned in 1907 to become president of the Carnegie Foundation. Like General Walker, Dr. Pritchett interested himself in public affairs and during



FIRST HOME OF THE INSTITUTE

"Beside carrying the many burdens of the presidency General Walker was a member of a multitude of boards, commissions, and clubs. He wrote many books and magazine articles and made numberless public lectures and addresses. His influence on the community was very great but he had given too much and at the apparent height of his career he died suddenly on January 5, 1897.

After a short interregnum James Mason Crafts, head of the Department of Chemistry, was elected President. Professor Crafts, born in Boston in 1839 and educated at the Lawrence Scientific School, spent much of his time abroad in the laboratories of Bunson and Wurtz, and was for several years Dean of the Chemistry Faculty of Cornell University. From 1870, to 1880 and from 1891 until

his seven years in Boston he was a member and officer in many organizations.

During this period the Alumni Association, now "the most effective alumni organization in the world" first developed. The discussion in 1904-5 over the Harvard-Tech alliance was the big factor in bringing about the reunion of the alumni in 1904. The enthusiasm and loyalty awakened at that time has grown in power ever since. Out of it came the Walker Memorial Fund amounting now to over \$125,000, and the Alumni Fund amounting to over \$200,000.

It was Dr. Pritchett who, recognizing the need for student activities and social life, started the old Technology Union in the two small rooms in the Mechanical Laboratories on Garrison Street. The new gym was built and the old one on Exeter Street given up.



PROF. ARTHUR A. NOYES

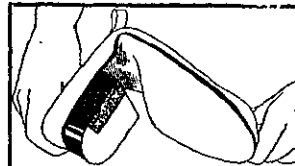
his election to the presidency he was a member of the Faculty and, for the latter period, a member also of the Corporation of the Institute.

During this period the Institute was better off financially than ever before. There were many large bequests. Large amounts from the estate of Henry L. Pierce made possible the building that bears his name. The Augustus Lowell laboratories were built. The Technology Review was started. But Dr. Crafts soon found the work of chemical research more attractive than that of administration so early in 1900 he resigned.

Dr. Henry Smith Pritchett, inaugurated in October 1900, was chosen to succeed him. A Missourian by birth, the son of an astronomer, Dr. Pritchett was trained an astronomer under Professor Asaph Hall at the Naval Observatory at Washington and by study at the University of Munich, where he obtained his doctor's degree. He then served successively as assistant professor of mathematics

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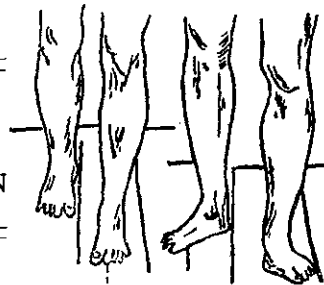
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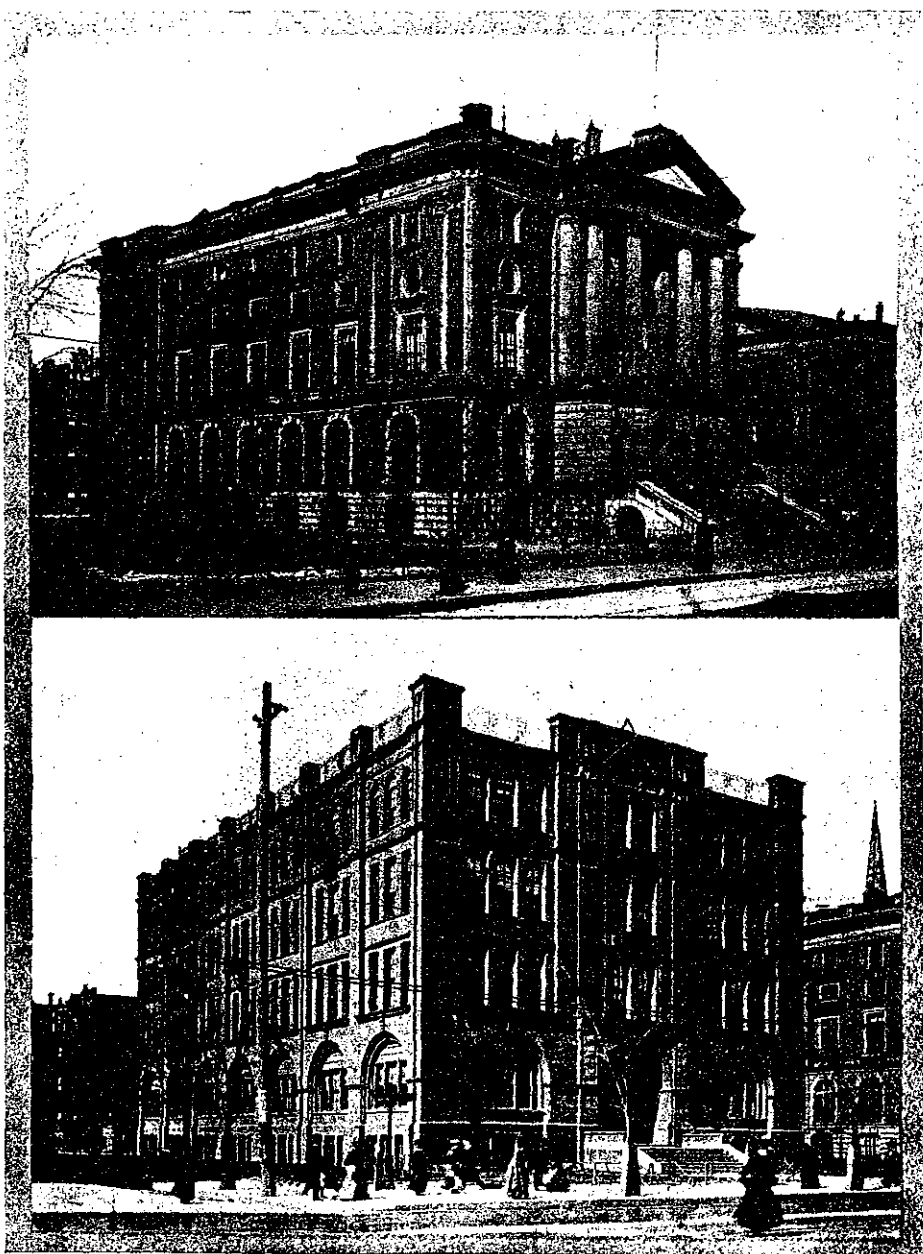


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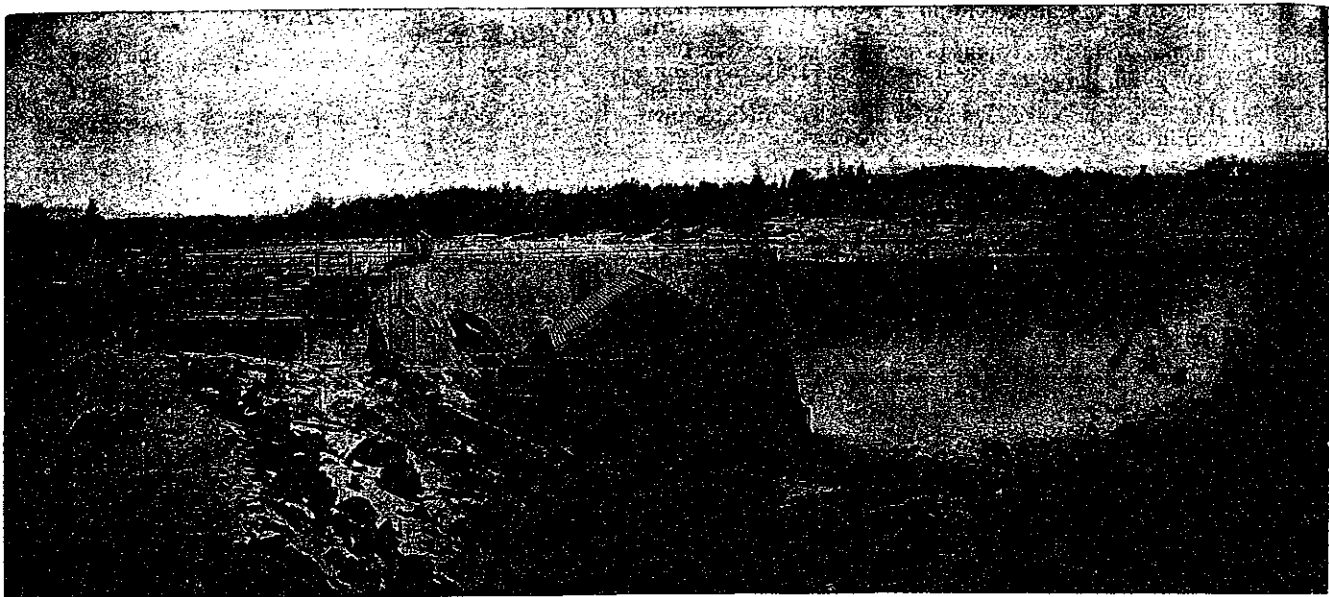
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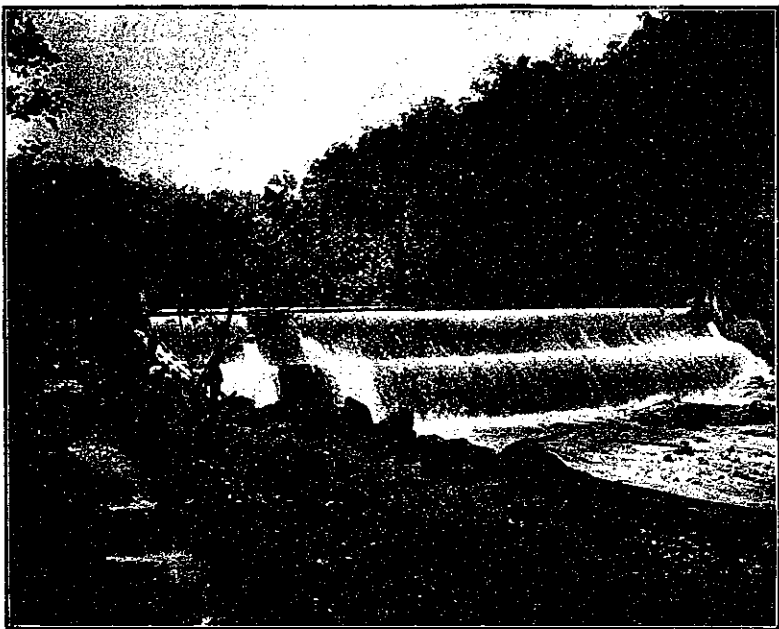


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ATHLETIC POLICY OF THE INSTITUTE

Only during the past few years have athletics at the Institute been carried on either as an important or successful feature of undergraduate life, although here, as at every school where there are a great number of young men, the love of athletic sports exists, and in the past it has found outlet in numerous inter-collegiate contests with results of varying success. For a long time after they had begun play an important part among the student activities, they seemed to have no guide, no means of control, either by the Faculty or any one else. They were always conflicting with and competing against the regular class work of the Institute, and it became necessary to devise a government to control the athletics and a policy by which to conduct that government. The policy which was established at this time is still in use and it is so beneficial that it has attracted the attention of many other institutions throughout the country. It is a policy that tends to give to individuals the necessary amount of exercise for the best physical and mental development, that tends to develop athletic students instead of the student athletes who prevail at so many of our larger colleges today.

The old system, or rather lack of it, brought student athletics to a crisis during President Walker's term of office,

was abolished in 1902, and base ball also went the same way for it was clearly evident that they were taking the time of the men that was needed in their studies, and also they were bringing in the demoralizing effect that is found everywhere during championship contests of this nature. In place of these inter-collegiate sports, there were substituted inter-class games and contests between individuals, such as are being advocated by all the leading educators. Many large colleges are, today, substituting their big athletic games by contests between the men or the classes within the institution, much along the lines that Institute Athletics have been conducted for so many years. This would seem to show that their policy was sound and well worked out.

After the discontinuance of the two, so-called major, branches of inter-collegiate sports, class rivalry in these same two events became even stronger than it had been in the previous years, and they became contests of great importance each year between the Freshman and Sophomore classes, in particular. In 1901 the cane rush was proven very dangerous and a relay race was substituted for it on the schedule of lower class competitions, and during the same year the program of events, now known as Field Day, was tried out for the first time and it grew to be a decided success.

In former years the Advisory Council was the only director of our athletics; this, of course, necessitated a mass meeting of the students whenever any important athletic matter was to be settled. A few years ago, however, the student body had become so large that this was impractical and the idea of the Athletic Association was evolved. This system, which calls for a body intermediate between the students and the Council, has proven very popular and is a decided success. The Association consists wholly of under-graduates, five elected from each class, together with the captain and managers of each of the Institute Teams. This much smaller body has frequent meetings and handles at once matters which come up, referring the more important ones to the Council for ratification.

The financial end of the policy has ever been that of getting together money, enough to pay the necessary bills, in the best possible way. Many plans have been tried and others suggested but the right one is yet to come. The original of The Tech Show, which was merely a minstrel performance, was given for the benefit of the Track Team and The Show is a large, though most uncertain, contributor to the treasury of the A. A. The Corporation gives a certain amount each year and there are as a rule some proceeds from Field Day which find immediate use. Recently, the plan of

ling all the big problems that arise and brought the Athletics of the Institute to a very high plane. Although we are members of the I. C. A. A. A. and the N. E. I. A. A. in perfectly good standing, we do not enter into the meetings and races as deeply as do many of the other colleges, and we still emphasize strongly our inter-class or inter-course events. It is this part of our Athletic system that is attracting the attention of many schools which are finding it necessary to reorganize and restrain their athletes. Physical exercise is an absolute necessity to the young men in our schools and colleges, and it seems that the athletic policy, the form of restraint under which athletics are put here at the Institute is more logical and better fitted to cope with the situation than any other. There is no doubt that our policy, of physical competition for the development of the individual, has been a success throughout this, the first period of its history.

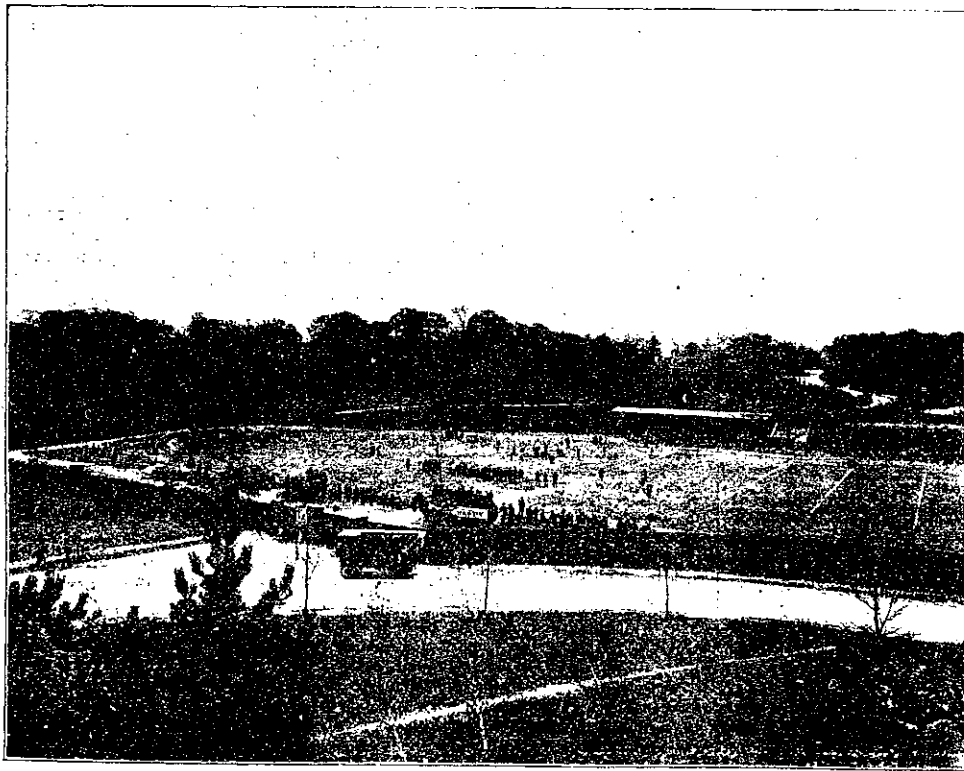
"Not the Quarry, but the Chase,
Not the Laurel, but the Race,
Not the Hazard, but the Play,
Make me, Lord, Enjoy Alway."

THE CIVIL

ENGINEERING

SOCIETY

By Isaac Hausman



TECHNOLOGY FIELD

and it was he who first realized the importance, the absolute necessity of regular exercise for Tech men such as they can best obtain from properly conducted athletic contests. He was met on every side by Faculty opposition, but in 1897 he gained a little victory, the first step towards our present system, in the formation of a committee of Alumni and Faculty members from which came the Advisory Council. It was not until the time of Pres. Pritchett that this really became powerful and took definite shape in its present form of three under-graduate and four graduate members. At the start the Council was strenuously opposed by the student for they had long been satisfied with their independent managements, but they soon came to see that the only possible solution was before them to accept.

Foot ball, as an intercollegiate sport,

Field Day, a half holiday given by the Faculty in the early part of November, is the big day of the year for the members of the two lower classes. At that time they meet in the competitive athletic contests of foot ball, relay racing, and the old sport known as tug-of-war, to settle the question of the superiority of one or the other of the classes. Settlement in this way obviates hazing and everything of its nature. A class which can win neither its Freshman nor its Sophomore Field Day is penalized by not being allowed to smoke class pipes until the third year, and they lose the right of having their numerals put on the beautiful Field Day Cup given by Samuel Cabot. Every autumn nearly two hundred men are brought into spirited competition for places on these teams, while the remainder of the entering class are getting training in the Gym.

selling season tickets to all interested was brought forth in the hope that it would interest and arouse some of the dead Alumni so that the financial question might be solved in that way. But it was soon found that only a few of the students would purchase them and that Alumni, whom it was expected the plan would interest most, were not at all ready to pay out good money for the support of the fair name of their Alma Mater in the Athletic World. A few of them do subscribe, however, and this money together with what little comes from the under-graduates in the same way, is very gratefully received by the Association.

For more than ten years the present policy has been governing Institute Athletics, and today it has gone far beyond the limits of an experiment. Indeed, it has shown itself capable of hand-

When this society was formed in 1889 the founders stated that the purposes of the society were twofold. The first was to bring before the men the practical side of the work which they are studying, and the second was to bring them in closer touch with each other and with their instructors. The first part is accomplished by securing speakers, who are at the top of their profession, and who usually speak on the practical side of engineering work; and by means of visits and trips of inspection to points of engineering interest. The second necessarily follows from the first but is assisted by having some of the meetings take the form of dinners.

Meetings are held at frequent intervals and interest in the society is not allowed to lag. This year has been an especially fortunate one in regard to speakers, as is shown by the large attendance at the various meetings, which has broken all records. This may be partly due to the fact that the membership also has broken all records; there now being about 225 members, which makes it by far the largest professional society in the Institute.

The affairs which have been featured during the past six months are as follows: The first dinner of the year was held at the Union, with Mr. L. K. Rourke, formerly division engineer of the Panama Canal as speaker of the evening, and he told in detail of how the "Big Ditch" is being constructed. Next came the combined meeting of all the Professional Societies, under the auspices of the C. E. Society at which Prof. Spofford and Prof. Jaggard talked on the Costa Rica Earthquake and its effect on buildings. A moving picture show, with films on engineering subjects; an inspection trip to the Lynn grade crossing abolition work, and a "Faculty Story Telling Contest" followed in succession.

For the remainder of the year, on April 15, a special boat will be chartered and a trip to the Cape Cod Canal made, to inspect the work now being done there; and on May 5, the annual banquet will be held at the Copley Square Hotel. At this time some of the leading engineers of the country will speak before the society.

THE TECH



"THE TECH" MANAGING BOARD

The first issue of this paper, the official student organ, was in November of 1881. Then, it was issued every two weeks, and was, in fact, a small magazine. Its Editors did not confine the function of the periodical to purely Institute and student activities, but ran scientific articles, a joke column, and other departments which would be rather impracticable in a daily. In 1892, *The Tech* more nearly assumed the appearance of a newspaper, and was published weekly. Thirteen years later, a tri-weekly was attempted, and this proved to be much more efficient in achieving its object,—that of reaching the student body. Indeed, so well did this arrangement work that in 1909, plans were formed for the final change into a daily newspaper,—its present form.

The management of *The Tech* as it is now, is composed of a board of upper class men who have entire charge of both the news and business departments. The News Board consists of the men in

charge of the various departments, headed by the Editor-in-Chief. Each member of this Board is responsible for a certain part of every issue, and has a staff to whom he assigns work. The Business Board is under the direct supervision of the Business Manager and consists of his Assistants in both the Advertising and Circulation Departments. The functions of the two latter departments, as well as of the News Board, are evident from their designations.

The Business Department offers an advantageous opportunity to "rub shoulders" with some of the leading and "worth-while" men of the city, and tends to develop in a man, the confidence that will be found to be indispensable when he leaves the Institute, and attempts to convince the Business Man, the Engineer or Architect of the Value of his Proposition.

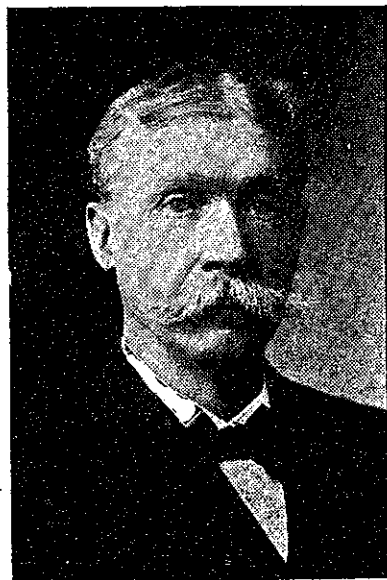
Taking everything into consideration, *The Tech* is, without the slightest doubt, the most instructive and valuable of the many undergraduate activities at the Institute.

THE DEPARTMENT OF MINING AND METALLURGY AND THE DEPARTMENT OF GEOLOGY

By Carle R. Hayward

The subjects of mining, metallurgy and geology are allied in many ways and although each is capable of high specialization, the policy at the Institute is to give the undergraduate student a knowledge of the fundamentals of all three and leave specialization to the graduate courses which are offered. The work in these subjects is conducted by the Department of Mining and Metallurgy (Course III) and the Department of Geology (Course XII); but nearly all the students are registered in the former which, in its three options, gives an opportunity to specialize slightly along the lines of mining, metallurgy and geology respectively. This specialization, however, is not carried to such a degree as to prevent a student in any one option from obtaining a good working knowledge of all three subjects.

One way in which the course in mining and metallurgy at the Institute differs from similar courses in many other institutions is the principle on which its laboratory work is conducted. It is impracticable in many cases to use full size machines, but without going to the opposite extreme of illustrating the principles with miniature apparatus, half or quarter size machines are used where possible, which allow a student to actually carry through an operation, take a complete account of stock and learn where to look for economy. At the same time different processes can be accurately compared and the best methods of treatment determined.



PROF. R. H. RICHARDS

In the geological department, lecture and laboratory work is accompanied by a thorough course in field geology where principles previously learned are applied to actual problems.

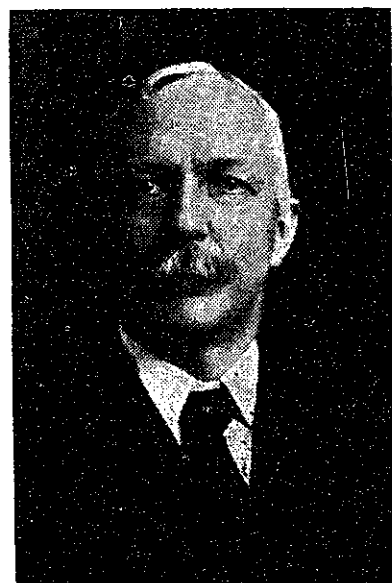
A factor which has contributed greatly to the success of the Institute is the presence on the instructing staff of recognized experts in various branches of science and engineering, who are constantly in demand for the solution of practical industrial problems. In the departments of Mining and Metallurgy, together with that of Geology, are several such men of international reputation with whom the students come in close contact in laboratory and class room. Graduates are continually testifying to the value of this association and its influence upon their later careers.

Many graduates of Course III are now holding important positions in the public service and others are connected with great industrial and engineering operations. Experience has shown that these men are often unexpectedly called upon to solve difficult problems which involve a knowledge of mechanical, civil, electrical and chemical engineering, and the fact that they usually solve these problems successfully speaks well for the broadness of their training, which in addition to strictly professional subjects includes courses in all the above departments.

SANITARY ENGINEERING

By Prof. Dwight Porter

Modern life has demanded that a group of scientists and engineers specialize along lines which have to do with the proper maintenance of the public health, and these men are known as Sanitary Engineers. They must be able to design works of the proper size and strength, with a view to accomplishing definite sanitary results. Therefore the Course in Sanitary Engineering was established at the Institute to train men to consider public service affairs, water supply and its purification, the disposal of sewage and water, questions of disinfection and of the effect of large industries on the public welfare. Naturally the course has much in common with the one in Civil Engineering, and to this curriculum is added a substantial amount of chemistry and biology so that the student may be well founded in the principles of sanitation, while on the other hand there is a corresponding reduction in bridge, railroad and some other features of the civil engineering course.



PROF. DWIGHT PORTER

In most cases, though not always, the graduates of this course have gone into sanitary engineering practice, and a good idea of the field open to such men is afforded by a view backward over the successive classes and the various positions now held by their representatives. These contain positions with many prominent firms in private practice; many with sundry state boards of health; positions as engineer, chemist or bacteriologist with sewage or water purification works; engineering positions in municipal works; professors of civil or sanitary engineering; city engineering; city health officers; sanitary engineers in private practice; sanitary inspectors; etc.

There is no more fundamental branch of engineering than that classed as sanitary, and there is no division of science more useful than this whose workers have for their slogan the people's right to health.

SOME FACTS ABOUT M. I. T.

(Continued)

(6) Not only has it advanced science in industry, but it has been a most powerful factor in the educational development of the country. It has broken down old traditions and introduced new methods into education. It has given strength and dignity to the "practical" and "laboratory" method and proved conclusively its value in dealing effectively with large bodies of men. It was "the first school to equip a mining and metallurgical laboratory for the instruction of students by actual treatment of ores in large quantities; the first to establish a laboratory for teaching the nature and use of steam, and a laboratory for testing the strength of the materials of construction in commercial sizes; and the first in America to establish a department of Architecture. It was also the first in this country to set up distinct and separate courses of study in electrical engineering, in sanitary engineering, in chemical engineering, and in naval architecture."

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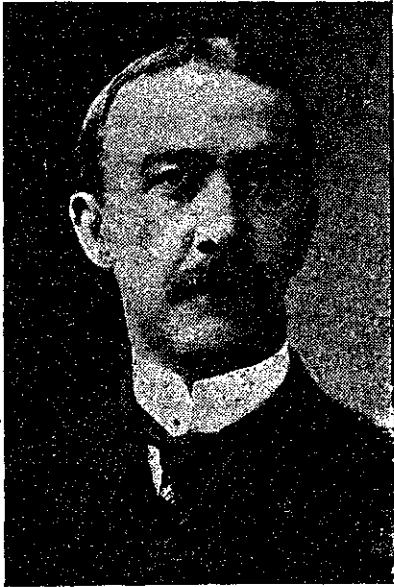
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CIVIL ENGINEERING COURSE

By Prof. Charles M. Spofford

Following the general policy adopted at the Institute, the instruction given to students in the Civil Engineering course is planned along three distinct lines which may be briefly described by the words general, scientific, and professional.

Under the first heading come such subjects as English, history, modern languages, and economics. In the second class may be placed mathematics, physics, chemistry, mechanics, geology, and mechanical and free-hand drawing. In the third division are the purely professional subjects.



PROFESSOR C. M. SPOFFORD

It is thoroughly recognized by those in charge of the course that the engineer is each day becoming a more important factor in the conduct of the world's affairs, and that to be properly prepared to perform his duties successfully and intelligently he must acquire a broad outlook upon the field of human activities; and be able to express himself in accurate and intelligent language. It is the purpose of the general subjects to give him this broad outlook, and to train him to express himself in clear and concise language.

Civil Engineering may be described as an art founded upon scientific principles. A thorough understanding of the fundamental sciences included in the second group of studies is recognized by all as essential to a sound understanding of the profession, hence a very considerable part of the time allotted to the course is given up to a thorough drill in these subjects.

The purely professional Civil Engineering subjects may be grouped under four main heads,—topographical engineering, including plane surveying and geodesy; transportation engineering, comprising the problems of railway and highway location and construction; hydraulic engineering, including the development of water power and public water supplies, the construction of sewerage systems, the development of harbors and rivers, and the solving of irrigation problems; structural engineering, including the design of stationary structures, such as bridges, dams, retaining walls, and steel-frame buildings.

All students in the Civil Engineering course are required to take not only the fundamental subjects, underlying these four branches of the profession, but considerable time is also allotted to the study of the allied subjects of heat engineering and electrical engineering, in order that the student may be prepared to deal intelligently with the machinery which is required in the execution and operation of the projects which he designs and directs. This wide range of subjects renders impossible the attempt to treat them all in detail in a course of four years, hence in his professional work, the student's attention is concentrated upon the comparatively few principles underlying all branches of the profession, and every effort is made to give him mastery over these by continuous drill in the classroom and by actual practice in the field, the drafting room and the laboratory. The details and cost of construction are sufficiently developed to impress upon him their importance and to enable him to solve problems in design with due regard both to theory and to economy. Accuracy and neatness in computations and drawings are insisted upon, and the student is taught that knowledge unaccompanied by the ability to use it, is of little value.

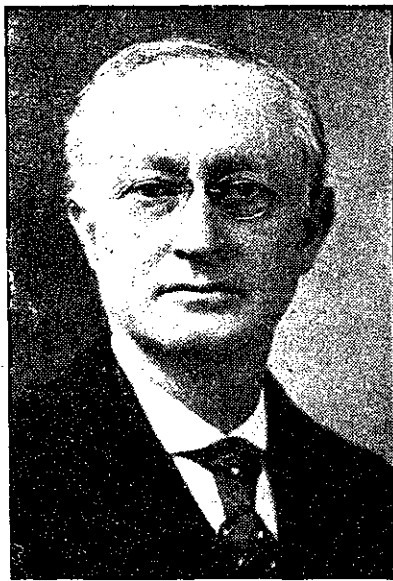
ARCHITECTURAL SOCIETY

By W. D. Foster

The Architectural Society of the Institute, with a membership of about ninety men, has been quite active this year.

There have been four smokers at which the Society has been addressed by men prominent in the various branches of the profession. At the first smoker Mr. Ernest Flagg, of New York City, spoke on the subject, "Styles of Architecture." Mr. Flagg is one of the most prominent architects in this country, having designed such buildings as the Singer Tower and the Naval Academy buildings at Annapolis. His talk was very instructive especially as it dealt largely with the French style for which Mr. Flagg stands quite firmly. The second smoker talk was given by Mr. J. Randolph Coolidge, Jr., '92, of the Boston firm of Coolidge & Carlson. Mr. Coolidge's subject was "The Difference Between the Study and the Practice of Architecture," and the advice it contained was very well received and appreciated. Mr. Hugh Cairns, of Boston, next gave a very interesting talk and demonstration showing his skill in architectural modeling. Mr. Cairns was the sculptor of the figures on the Trinity Church porch. Mr. Guy Lowell, also of Boston, and the designer of the new Art Museum, was the speaker at the last smoker. He outlined a three months trip in Europe, a trip arranged as the first trip of a young architect whose finances are limited. This outline which included books to read in preparation, places to see, railroad fares, etc., was extremely valuable to members of the Society. The next prominent speaker will be at the annual banquet in the early part of May.

This year we have tried out the scheme of having talks by members of the Society at the business meetings. These talks have included one by F. A. Burton, '09, describing the European trip which he and J. H. Scarff, '10, took last summer; one by C. C. Clark, '10, on the "Use of Precedent in Modern American Architecture," and a most interesting paper by



PROF. C. F. ALLEN

R. H. Doane, '11, describing the system and work of the office of McKim, Mead and White. It has been generally decided that this new scheme is a great success.

April the nineteenth there will be the annual Junior Week reception. The present plans will make this a most successful affair. The walls of the department will be covered with an exhibition of student work and also cartoons of many members of the Society. A short play with many local hits has been written and will be given as a side attraction by several of the students. About 400 invitations have been sent out so that many of the friends will have a fine opportunity to see the department and its work.

Another of the Society's activities is the Technology Architectural Record. In this Record is published the work of undergraduates and alumni. After four years of publication the Record has fully proved its helpfulness to the students and its value as legitimate advertising for the Institute.

Some years ago the proceeds from the Architectural Annual, which was the forerunner of the Record, were put in trust as the nucleus for a scholarship fund, the interest of which would become available when the fund amounted to \$1,000. This amount will be reached this year.

Timothy W. Sprague, '87

Frederic H. Keyes, '93

Henry D. Jackson, '97

AND ASSOCIATES,

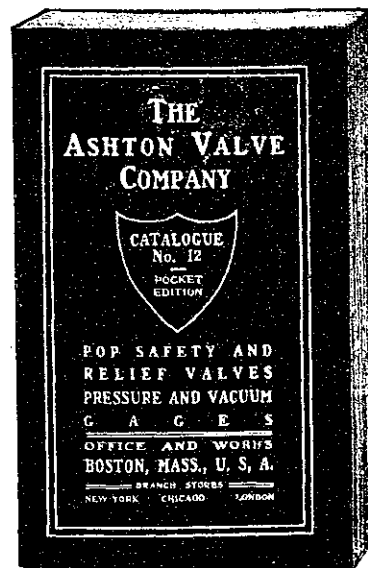
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MONDAY APRIL 10, 1911

ACKNOWLEDGEMENT

The Board of Editors of the TECH take this opportunity to publicly thank any and all persons who aided in any way the publication of this Semi-Centennial Issue. Rest assured your kindness is fully appreciated and will not soon be forgotten.

IN THE LIMELIGHT

Don't forget to be at THE TECH—TECHNIQUE Ball Game the morning of the nineteenth. You will never forgive yourself if you do.

Technique comes out a week from tomorrow at noon. Everybody be at the Oval in Football togs or any other form of wearabouts that seems appropriate and get into the RUSH with all your will.

The TECH will appear as usual tomorrow with a full account of the Field Day Stunts, Technology Congress Opening, Alumni Smoker, Final plans for the Technique Rush, and Junior Prom. Get one.

Get to the Show on time and don't disturb the rest of the audience by coming in late. Think how you would like it yourself.

The nine West Point cadets dismissed for hazing in 1908 by President Roosevelt have been reinstated.

SCHEDULE OF PAPERS TECHNOLOGY CONGRESS

SECTION A.

Scientific Investigation and Control of Industrial Processes.

Room 22. Walker Building.

Chairman—Prof. W. H. Walker

- 11.00 A. M. The Conservation of Our Metal Resources.—Albert E. Greene, '07, Electro Metallurgical Engineer, American Electric Smelting & Engineering Co., Chicago, Ill.
11.20 Some Causes of Failures in Metals.—Henry Fay, Professor of Analytical Chemistry, Mass. Inst. Tech., Boston.
11.40 Metallography and Its Industrial Importance.—Albert Sauveur, '89, Professor of Metallurgy, Harvard University, Cambridge, Mass.
Thirty Years' Work in Boiler Testing.—George H. Barrus, '74, Expert and Consulting Steam Engineer, Boston.
12.00 Coal Combustion Recorders.—A. H. Gill, '84, Professor of Technical Analysis, Mass. Inst. Tech., Boston.
12.15 P. M. An Electric Furnace for Zinc Smelting.—Francis A. J. Fitzgerald, '95, Consulting Chemical Engineer, Niagara Falls, N. Y.
12.25 Improvements in Cotton Bleaching.—Walter S. Williams, '95, Textile Expert, Arthur D. Little, Inc., Boston.
12.45 Frederick R. Royce.
2.30 The Chemist in the Service of the Railroad.—H. E. Smith, '87, Chemist and Engineer of Tests, The Lake Shore & Michigan Southern Ry. Co., Collingwood, Ohio.
2.50 The Debt of the Manufacturer to the Chemist.—Hervey J. Skinner, '99, Vice-President, Arthur D. Little, Inc., Boston.
3.10 Prevention and Control of Fires Through Scientific Methods.—Edward V. French, '89, Vice-President and Engineer, Arkwright Mutual Fire Insurance Co., Boston.
3.30 Research as a Financial Asset.—Willis R. Whitney, '90, Director, Research Laboratory, General Electric Co., Schenectady, N. Y.
3.50 Edward M. Hager. Edward C. Holton.
4.10 Reclamation of the Arid West.—Frederick H. Newell, '85, Director U. S. Reclamation Service, Washington, D. C.
4.20 John A. Freeman.

SECTION B

Technological Education in its Relations to Industrial Development

Room 23 Walker Building, April 11

Chairman, Dr. Arthur A. Noyes

- 11.15 A. M. The Technical School Graduate; His Strength and His Weakness.—H. P. Talbot, '85, Professor of Inorganic and Analytical Chemistry, Mass. Inst. Tech., Boston.
11.35 Development of Mining Schools.—Robert H. Richards, '68, Professor of Mining Engineering and Metallurgy, Mass. Inst. Tech., Boston.
11.45 The New Profession of Economic Engineering.—Roger W. Babson, '98, President, Babson's Statistical Organization, Wellesley Hills, Mass.
1.05 Instruction in Finance, Accounting and Business Administration in Schools of Technology.—Harvey S. Chase, '83, Certified Public Accountant, Boston.
12.5 Technical Education and the Contracting Engineer.—Sumner B. Ely, '92, Vice-President, Chester B. Albree Iron Works Co., Allegheny, Pa.
2.30 The General Educational Value of the Study of Applied Science.—Alan A. Claffin, '94, Pres., Avery Chemical Co., Boston.

(Continued on page 17)

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THE GLEE, BANJO, AND MANDOLIN CLUBS

The Glee, Banjo and Mandolin Clubs were among the first activities that were organized with the founding of the Institute; and have, from the beginning, held a place of prominence in Institute life. The object of the combined organization has been, not only to promote social conditions among the undergraduates, but primarily to bring Technology into the public eye by furnishing evenings of good music and diversion. There has always been very good musical talent in the student-body, and with hard work and the aid of efficient coaches—an innovation of late—the Clubs are now on a footing where they will compare well with any similar college organizations. They have always had the heartiest support of the under-

graduate body, not only in the providing of good material when the call is made for it, but also in enthusiastic attendance at all the concerts given in Boston for those connected with the Institute. The combined Clubs number about fifty men divided among the Glee, Banjo and Mandolin Clubs. The call for candidates last fall brought out about one hundred men, sixty of whom "tried out" for the Glee Club. Coach Hunt, of that club, chose twenty-five of the candidates for the various parts, and after a few week's co-operation with leader R. N. Doble, '11, the Club did praiseworthy work at the Winter Concert. At present the Club is under the leadership of P. L. Caldwell, '11, who was elected to the position in January, and is maintaining the high standard set last fall. The Mandolin Club under the leadership of J. A. Applequest, '12, has been doing exceptionally good work, and made a decided hit with the Wellesley and the Smith College girls. The club numbers

twenty-two and contains excellent material, which has been developed very creditably. The Banjo Club, W. D. Richardson, '11, Leader, has been less fortunate this year on account of the fact that last spring a great many good men were lost by graduation, and it was thought better by the management to support a good quintette rather than a moderately good club of larger size. The quintette has been a great success at every concert, in great measure on account of Richardson's excellent playing and winning smile. All the clubs are in fact doing well and deserve credit for their efforts.

The demand for concerts in and about Boston has been steadily increasing with

York City. They were enthusiastically received by the alumni in all of those cities, and the trip proved successful from every point of view. The Faculty deemed it wise this year to cut down on the mid-year vacation, so the trip had to be abandoned; but plans are at present being advanced for a big trip next Christmas vacation. The proposed trip will probably include the cities of Philadelphia, Pittsburgh, Cincinnati, Detroit, Chicago, Cleveland, Buffalo, and Syracuse. It is hoped that all of the alumni in these cities will give their heartiest support and make the trip a big success.



TECHNOLOGY MUSICAL CLUBS

graduate body, not only in the providing of good material when the call is made for it, but also in enthusiastic attendance at all the concerts given in Boston for those connected with the Institute.

The combined Clubs number about fifty men divided among the Glee, Banjo and Mandolin Clubs. The call for candidates last fall brought out about one hundred men, sixty of whom "tried out" for the Glee Club. Coach Hunt, of that club, chose twenty-five of the candidates for the various parts, and after a few week's co-operation with leader R. N. Doble, '11, the Club did praiseworthy work at the Winter Concert. At present the Club is under the leadership of P. L. Caldwell, '11, who was elected to the position in January, and is maintaining the high standard set last fall. The Mandolin Club under the leadership of J. A. Applequest, '12, has been doing exceptionally good work, and made a decided hit with the Wellesley and the Smith College girls. The club numbers

the standard of the clubs, and every year numerous proposals for concerts are rejected by the management, either because of the high price demanded by the clubs or because of lack of room in the schedule for those desiring concerts. The territory for giving concerts is not now limited to the near vicinity of Boston, but has reached out to include such places as Portsmouth, New Bedford, Northampton, and Providence. Concerts this year have been given in Northampton, Providence, Auburndale, Lynn, Wellesley, Waverley, Randolph, Dorchester, Chelsea; and three have been given in Boston. The season closes with the Spring Concert and Dance in Copley Hall on April 19.

Last year under the management of W. W. Warner, '11, the clubs went on their first Western trip. They gave successful concerts in Chicago, Detroit, Rochester, Buffalo, Syracuse, and New

CHEMISTRY AND CHEMICAL ENGINEERING

By Prof. H. P. Talbot

Of the six professional courses described in the first Catalogue of the Institute for 1865-66 one is a "Course in Practical Chemistry." The fundamental subjects of that course were much like those to be found in the Chemical Course today, or, indeed, in nearly all of the professional courses, but the unparalleled growth of chemical science soon made it necessary to include somewhat specialized instruction in some of its branches, and this, together with the increasing necessity on the part of the well-equipped chemist for a knowledge of physics and mathematics, has gradually excluded from the course such valuable subjects as Mental and Moral Philosophy, Navigation and Nautical Astronomy, Geology,

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Zoology, Physiology, and Botany, which are to be found in the original course schedule.

In 1865 the Department was numerically small but potentially important. It comprised Charles W. Eliot, who was Professor of General and Industrial Chemistry, and Frank H. Storer, Professor of Analytical Chemistry and Metallurgy, the first now so widely known for his educational work in the presidency of Harvard, to which he went from the Institute in 1869, and the second recognized as an authoritative writer on agricultural chemistry. The methods pursued by these men were also significant, for the Institute was among the first to insist upon the importance of laboratory methods of instruction, which, in the terms of the original catalogue, "trains the senses to observe with accuracy, and the judgment to rely with confidence on the proof of actual experiment." The Department occupied five rooms in the basement of the Rogers Building for a number of years, to which other rooms were gradually added until in 1883 the Department was transferred to the present Walker Building. These quarters have, in turn, been outgrown until the Department occupies about forty-five rooms, located in four different buildings and accommodating nearly or quite a thousand students.

The development of the Department may be most concisely stated by noting the men who have mainly contributed to its growth. In 1870 we

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TECHNOLOGY ORCHESTRA

TECHNOLOGY ORCHESTRA

There have been attempts made in previous years to organize an orchestra at Tech, but this year's effort has finally developed a successful one. The first meeting of prospective members was held in October and was attended by only twenty men. These however immediately proceeded to business and elected R. Eksergian conductor, A. M. Eisenberg concert master, N. E. Brooks manager, and W. D. Stevens secretary. Although there were very few men to begin with those that there were started in practice and rehearsals at once. The first formal appearance among the student body of the new organization was at the Civil Engineering banquet where they played selections from the "Red Mill," the "Bohemian Girl" and the "Chocolate Soldier." This first concert showed some raggedness and from that time more pains were taken in perfecting unity.

The next appearance of the orchestra in public was with the combined Musical Clubs in Copley Hall at the Winter Concert. Among the pieces they played at this concert was the "Raymond Overture," which was well rendered, considering especially that the orchestra has had at no time any outside assistance.

The orchestra was firmly established after the Winter Concert. Until after mid-years, however, active rehearsals ceased, but the members took up work again immediately after the opening of the second term. The number of men began to increase until there were finally thirty-four numbers enrolled.

The orchestra gave a concert at the Somerville Y. M. C. A. on February twenty-second, being assisted by a reader. This concert might be considered as successful from two points of view. First, they rendered the selections mentioned above, receiving commendation for the manner in which they were given. Besides this the orchestra made enough on the concert to wipe out the deficit already incurred for music.

They had an engagement to play in Newton, which, however, they cancelled in order to devote more time to preparing for the Congress of Technology concert at Symphony Hall on April tenth. They also will again cooperate with the Musical Clubs in the Spring Concert, April nineteenth.

The repertoire has been considerably extended, there being in addition to the above mentioned, selections from "La Traviata," "La Dance Blanche," the "Egyptian Ballet," and "Naughty Marrietta."

On the whole the year has been a successful one for the orchestra. Concert playing without much practice is at least difficult, yet they have well rendered some rather hard pieces. The members seriously desire that it continue as a permanent organization, and with this spirit it is probable that next year will see a larger and more complete orchestra, which with the reputation of this year behind it should have a successful season.

THE NEW TECHNOLOGY

(Continued from page 1)

campus, the smaller, approximately of fifteen acres, will be used wholly for the student quarters, here will be found the athletic field with the Walker Memorial and the dormitories.

On the plan at the extreme left we find the Naval Architectural Building; and following along in order toward the center are the Electrical Engineering, Physics and Chemistry Buildings. In the center is the Administration Building which will contain the general offices of the Institute, the general library, etc. Next on the right is the Mechanical Engineering Department and the Power House which is shown, by proxy, through its chimney over the M. E. Building. Then comes the Biological Department with the Civil Building on the extreme right.

Directly in the center of the background on the smaller part of the property is the Walker Memorial which will be the social center for the students, containing reading rooms, dining rooms and offices for student activities, a gymnasium, swimming pool and many other conveniences for the use of the students. This building has already been provided for by a fund of over \$100,000 which has been raised by the Alumni. Directly in the rear of this will be the Athletic Field with a quarter-mile cinder track and a concrete stadium to hold at least ten thousand people. Located at convenient places around the Field and Gym will be the dormitories and some of the fraternity houses.

The following fraternities have already communicated to President MacLaurin their intentions of taking ground on the new site on which to erect their houses: Alpha Tau Omega, Delta Kappa Epsilon, Delta Tau Delta, Kappa Theta, Lambda Phi, Phi Gamma Delta, Phi Kappa Sigma, Theta Delta Chi, Theta Xi and Sigma Alpha Epsilon. Delta Psi and Delta Upsilon are as yet undecided on the change and they have not given the President any definite information as to their movements.

It has been estimated that it will take at least two years to erect any one of the buildings for the new Technology, so that considerable time would necessarily elapse before the Institute could really move, even though the site should be selected in the very near future.

TRAVELS IN EUROPE

Professor H. W. Shimer, of the geological department, is preparing to deliver a course of lectures next year on the geology of Europe. During the Summer he will traverse the continent from Naples to Norway, with a run into France and across to Great Britain to complete the material for this course.

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CONGRESS SPEAKERS**SECTION B**

Continued From page 14

- 2.50 The Influence of the Institute upon the Development of Modern Education.—James P. Munroe, '8, President, National Society for the Promotion of Industrial Education, Boston.
- 3.05 The Training of Industrial Foremen.—Charles F. Park, '92, Assoc. Professor of Mechanical Engineering, Mass. Inst. Tech.; Director of Lowell Institute
- 3.25 The Responsibility of Manufacturers for the Training of Skilled Mechanics and Shop-Foremen.—Arthur L. Williston, '89, Principal, Wentworth Institute, Boston.
- 3.45 The Function of Technical School Laboratories.—H. W. Hayward, '96, Asst. Prof. App. Mech., Mass. Inst. Tech., Boston.
- 3.55 Technical Education—Its Function in Training for the Textile Industry.—Charles H. Eames, '97, Principal, Lowell Textile School, Lowell, Mass.
- 4.10 R. R. Taylor.

SECTION C.**Administration and Management.****Room 11. Engineering Building B.**

Chairman, Dr. Davis R. Dewey.

- 2.30 P. M. An Object Lesson in Efficiency.—Willard Lewis, '75, President, The Tabor Mfg. Co., Philadelphia, Pa.
- The Trend of Commercial Development Viewed from the Financial Standpoint.—Charles Hayden, '90, Banker, Boston.
- Profitable Ethics.—David Van Alstyne, '86, Vice-President, Allis-Chalmers Co., Milwaukee, Wis.
- 3.00 P. M. The Scientific Thought as Applied to Railroad Problems.—Benjamin S. Hinckley, '99, Engineer of Tests, N. Y. N. H. & H. R. R. Co., Boston.
- 3.20 P. M. Reliability of Materials.—Walter C. Fish, '87, Manager, Lynn Works, General Electric Co., Lynn, Mass.
- 3.40 P. M. Henry G. Bradlee.
- 4.00 P. M. Scientific Industrial Operation.—Tracy Lyon, '85, Asst. to First Vice-President, Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.
- The Natural Increase in the Ratio of Burden to Labor in Modern Manufacturing Processes.—James B. Stanwood, '75, Vice-President and Engineer, The Houston, Stanwood & Gamble Co., Cincinnati, Ohio.
- Scientific Management of American Railways.—Samuel M. Felton, '73, Pres., Chicago Great Western R. R., Chicago, Ill.

SECTION D**Recent Industrial Development**

Chairman, D. C. Jackson

Room 6—Lowell Building, Clarendon Street

- 11.00 The Elimination of Some sources of Loss in a Large Producer-Gas Engine Plant.—John G. Callan, '96, Electrical Engineer, Arthur D. Little, Inc., Boston.
- 11.15 The Development of a System of Underground Pneumatic Tubes for the Transportation of United States Mail.—B. C. Batcheller, '86, Chief Engineer, American Pneumatic Service Co., New York City.
- 11.20 Mr. Cadman.
- 11.30 C. E. Riley.
- 11.45 Mr. Hobart.
- 11.55 Mechanical Handling of Materials.—Richard Devens, '88, Mgr. Eastern Office, Brown Hoisting Machinery Co., New York City.
- 12.10 The general solution for alternating currents. George A. Campbell, '91.
- 12.25 Mr. Goodwin.
- 12.45 Mail Handling Machinery at the Pennsylvania Railroad Terminal and United States Post Office at New York City.—Julian E. Woodwell, '96, Consulting Engineer, New York.
- 2.00 The Improvements in Efficiency of Electric Lighting Properties and What the Public Gains Through These Improvements.—William H. Blood, '84.
- 2.15 The Continuous Cooling of Circulating Water Used for Condensing Steam.—Edward F. Miller, Prof. Steam Engineering, Mass. Inst. Tech., Boston.
- 2.25 The Development of Economical Ore Dressing Systems.—Frank E. Shepard, '87, President, Denver Engineering Works, Denver, Colorado.
- 2.40 Mr. Ferguson.
- 3.00 The Technics of Iron and Steel.—Theodore W. Robinson, '84, Vice-President, Illinois Steel Co., Chicago, Ill.
- 3.20 Mr. McKibben.
- 3.40 Asbestos.—Prof. C. L. Norton.

**COMBINED SOCIETIES
DINNER**

By O. B. Denison

Not to be outdone by the alumni in celebrating that memorable year when Governor Andrews granted the charter that brought into existence the Massachusetts Institute of Technology, the electrical engineering society have arranged for a monster student celebration in the form of a joint professional societies dinner to be held in Technology Union, Wednesday evening April 12.

The plan met instantaneous favor with the executive heads of the other professional societies at the Institute, and accordingly the program committee of the electrical engineering in cooperation with the presidents of the other societies has completed arrangements for the dinner. The program committee of the electrical engineering society embraces in its membership, in addition to President L. P. Ferris '11, who is a member ex-officio, O. B. Denison, '11, chairman, D. P. Gaillard '11, and L. T. Hemmenway '11.

**F. G. SPRAGUE**

As guests of the evening the committee has secured Mr. Frank J. Sprague of New York city; President Richard Cockburn MacLaurin of the Institute; Dean Alfred E. Burton and Bursar Frank H. Rand. Mr. Sprague comes at the special recommendation of Professor Dugald C. Jackson, head of the department of electrical engineering.

Mr. Sprague is one of the foremost consulting engineers of the country. He has been intimately connected with a number of gigantic engineering problems, and is eminently well fitted to speak at length on practically any of the many aspects of the subject of engineering.

In order to make the affair a truly student affair, President MacLaurin, the Dean and the Bursar will be on hand to speak. On such an occasion as this it is particularly fitting that these three men should speak, as each is so intimately connected with the relations between students and their Alma Mater.

A large advance sale of tickets indicates that the hall will be taxed to its utmost, but there are still a number of tickets which may be obtained for the event. The affair will start promptly at 6.30 and it is urged by the committee in charge that all are prompt in turning out for the affair.

SECTION E.**Public Health and Sanitation**

Chairman, W. T. Sedgwick
Room 11, Eng. B. 24 Trinity Place,
April 11

- 11.00 A. M. Profitable and Fruitless Lines of Endeavor in Public Health Work.—Edwin O. Jordan, '88, Professor of Bacteriology, University of Chicago, Chicago, Ill.
- 11.15 The Technical School Man in Public Health Work.—Harry W. Clark, '85-'87, Chief Chemist, State Board of Health, Boston.
- 11.30 Present Status of Water Purification in the United States and the Part that the Massachusetts Institute of Technology Has Played.—George C. Whipple, '89, Consulting Engineer, New York City.

(Continued on page 18)

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ELECTRICAL ENGINEERING

By Prof. D. C. Jackson

The electrical engineering course is planned for the purpose of giving that professional engineering training which is needed by men who have to do with the generation of electric power and its utilization for any of those purposes to which electric power is now put. The use of electric currents for providing motive power, for setting up electrochemical operations, for heating, and for other purposes has become so universal in the industries of this nation that electrical engineers must possess an unusually wide understanding of the industrial sciences, including those relating to transportation and inter-communication. A particularly wide understanding is required of those sciences affecting the generation and industrial use of power, and the industrial use of heat and chemical reactions. The subjects of chemistry, physics, mathematics and applied mechanics, therefore, compose the backbone of the electrical engineering curriculum. Articulated with these basic subjects are the more directly professional studies which relate to the generation of mechanical power and its transformation into electrical power, the transmission of power, and the utilization of electrical power for purposes of transportation and inter-communication and those numerous other purposes for which the modern industrial and social developments have made it almost a necessary agent. These more directly professional subjects which are articulated with the basic subjects of chemistry, physics, mathematics and applied mechanics consist of: the principles of electric and magnetic phenomena and particularly of electric and magnetic circuits, alternating currents, electrical measurements, alternating current machinery, thermodynamics and steam engineering, hydraulics and water power, and associated studies. Following these subjects in the curriculum of Course VI come a series of studies in which attention is more particularly directed to the principal engineering installations in which electrical power is generated and utilized, such as central electric power stations (whether steam or water power drives the prime movers), electric illumination, electric transmissions of power, electric railroads and telephony. With these subjects are also associated brief study of surveying, machinery and structures.



PROF. DUGALD C. JACKSON

Sincere study of the foregoing subjects when associated in logical order as laid down in our curriculum gives that kind of training which is distinctly the scientific basis of electrical engineering practice; but a professional engineering course must comprise more than the scientific studies alone. Studies of the character of economics are a distinct part of the engineer's professional training, and our students are required to pursue a reasonable amount of economics and also of English, foreign languages and history. These studies are associated in the course so that they make a part of the work of each of the four years of the course. By this arrangement of the subjects the students are afforded a fortunate contrast of the reasoning processes pertaining to the exact logic of mathematics and those pertaining to the less definite but equally necessary methods obtained by following the balance or preponderance of evidence as used in economics and in historical studies. Both of these processes of reasoning are of constant value to any man who, like an engineer, applies the principles of physics and chemistry to human affairs, and no engineer can come to commanding influence unless he has facility in each of these processes. Course VI does not end with four years of study following the preparatory school course, or two or three years following the Arts college course, but, offer those

who are able to spend additional time profitably, it extends into one or two additional years of advanced study and research leading to higher and better accomplishments for the students and representing better preparation for an influential engineering career. Such advanced study successfully prosecuted is signalized by higher degrees conferred by the Institute.

CONGRESS SPEAKERS

SECTION E

Continued from 17

- 11.45 The Pollution of Streams by Manufacturing Wastes.—William S. Johnson, '89, Sanitary and Hydraulic Engineer, Boston.
12.00 Sewage Disposal with Respect to Offensive Odors.—George W. Fuller, '90, Consulting Hydraulic Engineer and Sanitary Expert, New York City.
12.30 The Life Saving Corps of the Technical School.—Severance Burrage, '92, Prof. Sanitary Science, Purdue Univ. Lafayette, Ind.
12.45 Factory Sanitation and Efficiency.—C. E. A. Winslow, '99, Assoc. Prof. of Biology, College of City of New York, New York City.
1.00 Prof. E. B. Phelps

SECTION F.

Architecture.

Chairman—Prof. F. W. Chandler.

11.00 A. M.—1.00 P. M.

Landscape Architecture, A Definition and A Brief Resume of Its Past and Present.—Stephen Child, '88, Landscape Architect and Consulting Engineer Boston and Santa Barbara.
Some Phases of Modern Architectural Practice.—Walter H. Kilham, '89, Architect, Boston.
The Engineer and Architect Unite.—Luzerne S. Cowles, '97, Assistant Designing Engineer, Boston Elevated Railway Co., Boston.

COLLEGE NEWS

Last Saturday morning access to the chapel at Tufts College was rendered dangerous by the hail of snowballs and lumps of snow that bombarded the door from all sides. Only about two-thirds of the men braved the flying missiles and fought their way into the chapel where the organist was playing "Holy Night, Peaceful Night," etc.

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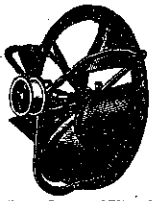
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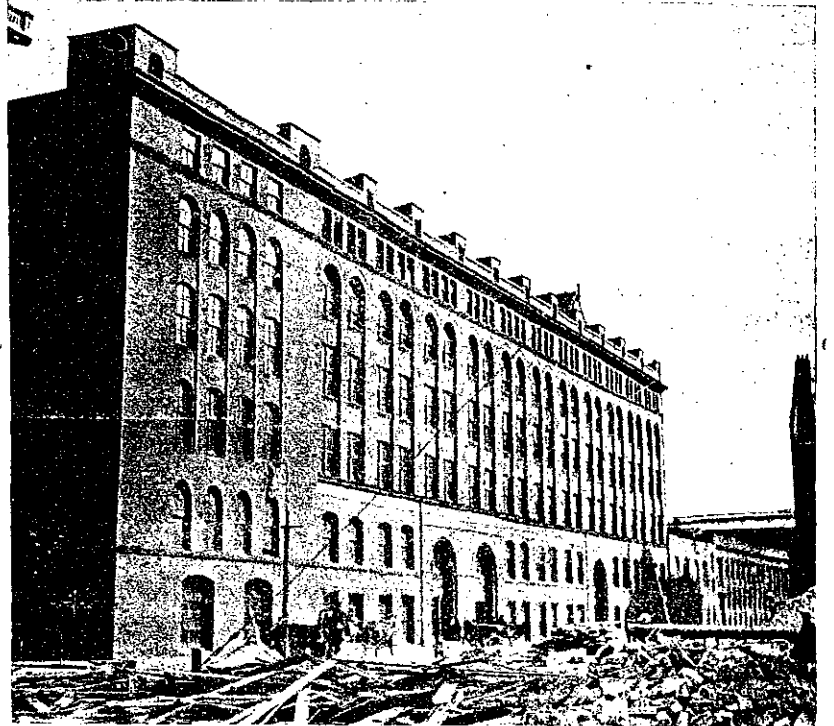
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(Continued from page 9)

Dr. Arthur Amos Noyes, elected acting president in 1907, was born in Newburyport, Massachusetts in 1866. A graduate of the Institute and of Leipzig, he has spent his entire life teaching chemistry and particularly physical chemistry at the Institute. He established during

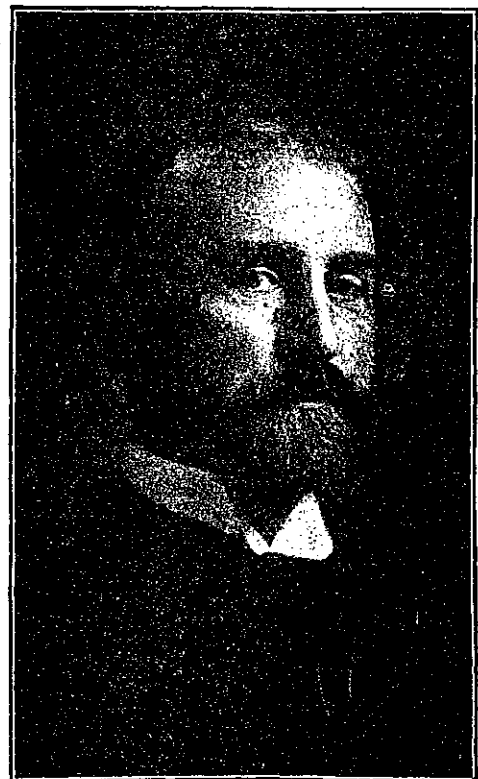
along every line. With the questions of a new site and increased state aid settled the work of building a New Tech of greater efficiency is about to begin. Throughout her short history of fifty years Technology has never lacked for splendid self-sacrificing, loyal men of large calibre and high intellectual powers, courageous in reading the future and bold in their plans to meet it. Technology still has those men today. They are in a strong alumni association that is bound together by the Review, radiat-

**ENG. BUILDINGS, PIERCE AND THE UNION**

the two years of his presidency the Department of Electrochemistry, and the Research Laboratory of Applied Chemistry. The Union was transferred from its old and meager quarters to the new building on Trinity Place. But Dr. Noyes like Dr. Crafts before him preferred his chemistry research work to the administrative problems and in 1909 he gave way to Richard Cockburn MacLaurin.

Under Dr. MacLaurin the Institute is entering upon a period of expansion

ing enthusiasm and energy from every page. They are in the Faculty, a body of men of unswerving devotion. They are in the administration offices just as they have always been. Even the undergraduates are striving to add their mites by seeking to leave the Institute a little better than they found it. The work of the early presidents and their associates, an inspiration to us to-day, is bearing fruit. The old dream of William Barton Rogers is come true.

**HENRY S. PRITCHETT****IN THE LIMELIGHT**

Managing Editor and Athletic Editor at The Montague at seven-thirty:—"Can we dine here this evening, pretty maid?"

Waitress, looking her watch:—"No, we don't eat here at night."

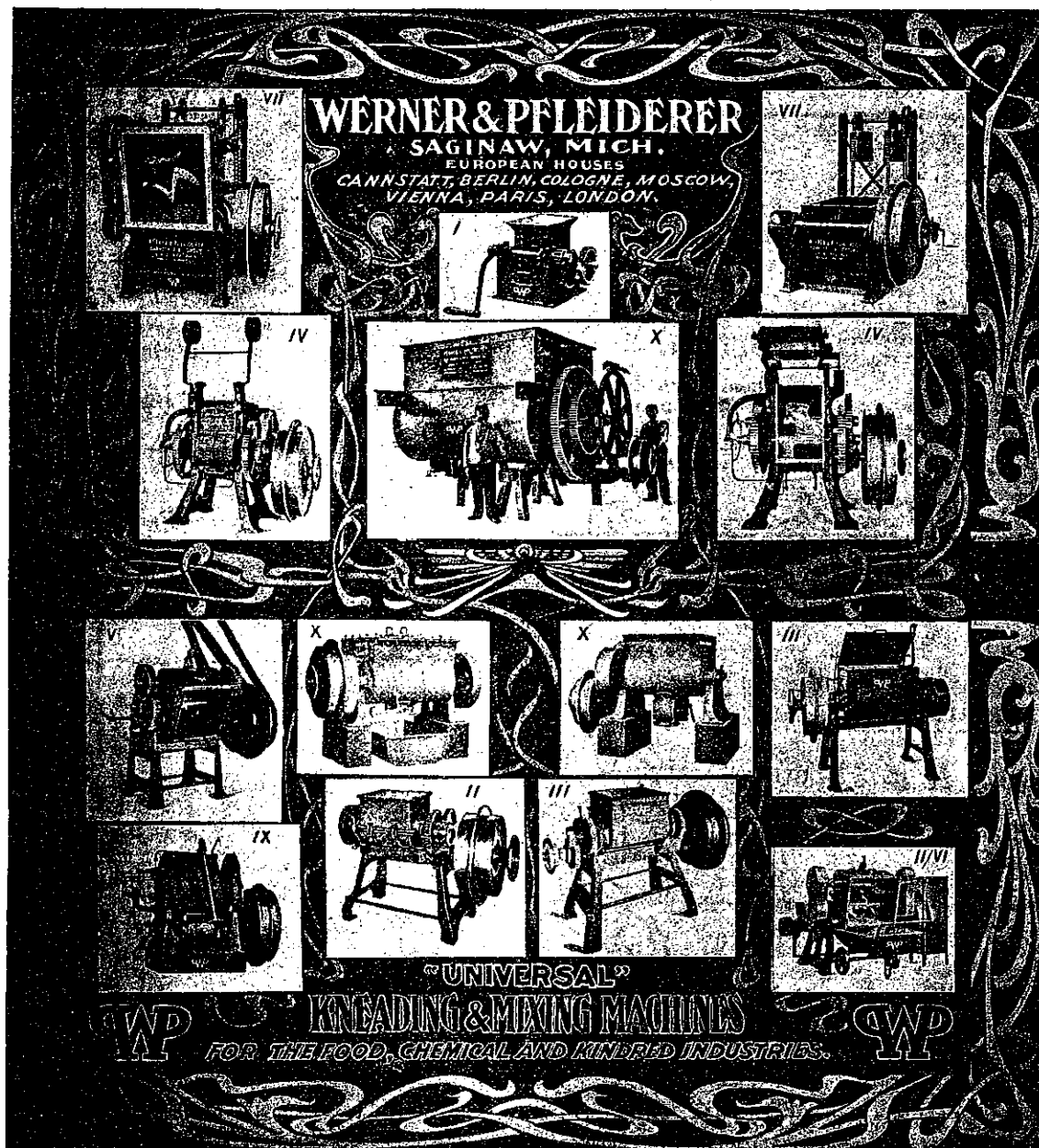
Seven and a half times the distance between Natick and Wellesley Centre, leaves the Editor-in-Charge at College Hall.

Did you know we could play ball? Well, we will show you on the nineteenth. We are tired now but not then.

I heard Jimmie White lost a sock (her) football, and is trying to find it for Field Day.

That boy, Zeke Williams, will be a war correspondent some day, judging from his dope on the Field Day stunts.

Have you taken your rooms at — (Oh, I beg your pardon, the new site is unmentionable.)



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CAPE COD CANAL TRIP

By H. P. Ireland

The Civil Engineering Society has made arrangements for an excursion to the Cape Cod Canal. This is one of the largest engineering jobs in this part of the country and there are many features which should make the trip one of great value and interest to the members of the Society.

This canal is "the first link in the chain of proposed protected waterways from Boston to Florida." The work is being done by the Cape Cod Construction Company under a charter granted by the Massachusetts Legislature in 1899. From Sagamore on the northern side of the Cape the canal is to be dug a distance of about eight miles to Buzzards Bay, but owing to the shoalness of the water there is about thirteen miles of actual dredging. The maximum cut to mean high water is twenty-nine feet and the canal is to be twenty-five feet deep with a minimum bottom width of one hundred feet and side slopes of three to one. The soil is all sand or gravel and the slopes will be unprotected except in weak spots. Although there is considerable difference in the tides at the ends of the canal it has been found unnecessary to build locks and thus the cost of both construction and operation are considerably lessened.

At the Sagamore end there is to be a breakwater about three thousand feet long which will protect the mouth of the canal and serve as a sort of harbor. The work also involves the construction of three or more bridges and the relocation of about five miles of railroad track.

Mr. H. W. Durham is the resident engineer in charge of the job and the work is divided into two divisions, each in charge of an assistant engineer. Both these assistants and also the chief draughtsman, Mr. Moody, are Tech men. Mr. A. S. Ackerman in charge of the Sagamore end was in the class of '03 Course III., and he has had two years experience on the Panama Canal. These men very cordially received the committee in charge of the trip and promised to do what they could to make the excursion a success.

Arrangements have been made to charter the steamship King Philip for Saturday, April 15. It will be an all-day trip and an early start will have to be made. The boat will have to enter the Sagamore end of the canal and there will be a probable chance to see work going on in connection with the breakwater. The men will be landed just inside the entrance and after investigating the plant and field offices at this point they will walk up the shore of the canal toward Sagamore. At this end, the famous suction dredge, General MacKenzie, is at work as well as several bucket dredges and land diggers. At Sagamore are located the Keith Car Works, one of the largest car manufacturing plants in the world, and arrangements are being made to inspect this plant. Meanwhile those who prefer can go to Buzzards Bay at the other end of the Canal where there are two very interesting bridges of the bascule lift bridge type, one of which is still in the process of construction.

One hundred and fifty men have signed up for the trip and many members of the faculty and instructing staff of the department have signified their intention of going. Tickets are now on sale for \$2.00 and the number will be limited to prevent any discomfort due to over-crowding. Hot coffee will be provided and possibly a chowder, but the fellows will have to bring lunches, as there are no facilities for feeding such a large number. The Society almost unanimously prefers to go by the water route because the possibilities of a grand good time are so attractive and there seems to be no reason why the trip should not be a success both socially and professionally.

SOME FACTS ABOUT M. I. T.

(continued)

(7) Not only has it advanced science and industry and helped to develop sound methods of education, but it may be expected to be a power for promoting peace and goodwill among the nations. Its influence in this direction comes not only from the fact that it is a scientific institution and that the spirit of science is always on the side of reason, but especially because for its size it is one of the most cosmopolitan institutions of higher learning in the world. It has representatives of every state and territory in the Union and more than one hundred foreigners from thirty-six different countries. The fifteen hundred men who now come to it every year from so many parts of the world are scattered still more broadcast after graduation, so that there are few portions of the world where their influence is not felt.

PHYSICS DEPARTMENT

By Prof. Charles R. Cross

From the first conception of the plan of the School of Industrial Science of the Institute in the mind of its founder, Professor Rogers, the importance of the study of physics, both pure and applied, was clearly recognized. And from the opening of the institution to students down to the present day the subject of physics, together with mathematics and chemistry, has been assumed by the faculty to constitute the basis upon which the professional instruction must necessarily rest.

The conception of a physical laboratory designed for the regular systematic teaching of students in classes, was an entirely new one in every respect.

There was no experience elsewhere which could serve as a guide; the methods which had sufficed in the chemical laboratory were not applicable, a series of experiments had to be devised which were within the grasp of undergraduate students, which should be capable of completion within one or two hours, together with apparatus of a simple character, not too complex for ready manipulation by the unskilled student. And many were the other difficulties encountered. These obstacles were all surmounted, however, by the knowledge, skill, enthusiasm and indefatigable perseverance of Professor Edward C. Pickering, then Thayer Professor of Physics at the Institute.

In October, 1869, the Physical Laboratory of the Institute was opened to students, and systematic laboratory instruction to classes in physics was then given for the first time in the world. During the summer of 1872 the laboratory was opened for the benefit of a number of college professors who were desirous of studying there.



PROF. C. R. CROSS

In 1873 the Corporation of the Institute, acting upon the recommendation of Professor Pickering, decided to establish a course leading to a degree which became Course VIII.

In January, 1877, Professor Pickering resigned his professorship at the Institute, after ten years of devoted and fruitful service.

Shortly thereafter the Physical Department at the Institute was placed in charge of the writer of this article, who had become one of its staff of instruction upon his graduation in 1870.

The next especially noteworthy advance, however, was the establishment, in 1882, of a Course in Electrical Engineering as an alternative to the Course in Pure Physics.

In 1870, Professor Pickering purchased in London a Wheatstone's bridge, slide wire bridge, Thomson Galvanometer, standard condenser and other electric measuring instruments, and these were shortly afterwards put into use by the students in the physical laboratory.

In 1884 there was opened as a part of the Rogers Laboratory a Laboratory of Heat Measurements, which was altogether unique.

In 1897 the Optical Laboratory was opened in charge of Dr. Wendell.

In 1894 the Laboratory for Physico-Chemical and Electrochemical Measurements, suggested and planned by Professor Goodwin, was opened, and in 1901 a Course in Electrochemistry (now Course XIV), under his charge, was established. The Institute again was the pioneer in thus laying out a system of instruction in this branch of applied science.

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One of the most important factors in the success of a student at the Institute is a thorough preparation. Chauncy Hall School prepares exclusively for the Institute; and the purpose is not merely to train its candidates to pass the entrance examinations, but to give them intelligence in observation, accuracy in reasoning, and facility in expression. The teachers are men who are specialists in their several departments, and the laboratories and equipment are excellent.

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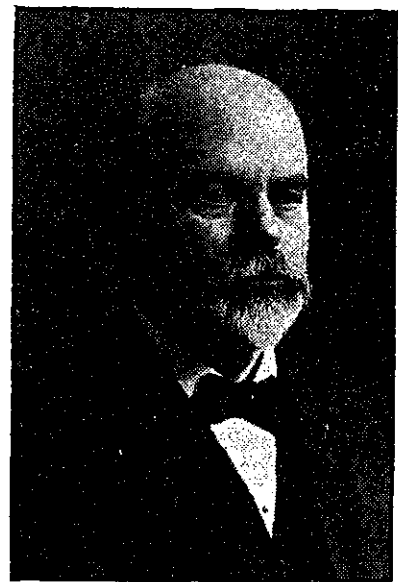
NAVAL ARCHITECTURE AND MARINE ENGINEERING

By Prof. Cecil H. Peabody

The course in Naval Architecture leading to the degree of bachelor of science was offered in 1893 and the first class was graduated in 1895, being the first class from such a course in America. In 1899 the Department was assigned quarters in Time Building and in 1904 it was transferred to Engineering C. In 1901, at the request of the Navy Department, the Institute established a graduate course in Naval Architecture leading to the degree of Master of Science for officers designated for the Corps of Naval Construction and in 1904 the first class was graduated.

The course offers instruction to those who expect to be ship-designers, ship-builders and designers or builders of marine engines, including marine steam turbines.

To those who intend to enter the course it may be said that the best preparation is a good all round training as offered by our first and second years. In order to succeed, one must be able to do his mathematics and drawing with reasonable facility; but that is true for any engineering course. Of the later work, the applied mechanics and steam engineering are as much professional as is naval architecture itself.



PROF. C. H. PEABODY

The lectures on naval architecture deal with displacement and stability, with the determination and application of power for propulsion, and with the theory of waves, and their influences on the steadiness and safety of a ship at sea.

The lectures on marine engineering deal with the development of power by reciprocating engines and steam turbines, and with the size and proportion requisite for strength and stiffness of their members, as well as with the vibrating produced by engines and methods of reducing it.

In the drawing room students work out the design of a ship, drawing lines, selecting scantling, arranging plating, and making computation of displacements, stability, strength and power. A series of lectures on ship construction explain and amplify this work. In the same way a design is made of the engine adapted for propelling the ship under design, drawing the probable indication diagram, determining forces acting on the members of the engine, and drawing the details and general arrangement. In like manner details and general arrangements for marine turbines are computed and drawn.

Students of the corps of naval constructors have an extensive course in warship design consisting of lectures on the theory of design and the application to some important type of warship, the type being varied from time to time so as to include all types in service. The design is carried to the stage customary in the Navy Department for inviting proposals from contractors, and includes the reparation of lines, distribution of epights, powering of the ship, disposition of armament and armor, storage of ammunition, provisions and fuel, arrangement of machinery space, living quarters, anchor-gear, boats, steering-etc.

The department has been fortunate in that from the liberal policy of the Corporation and by the generosity of friends

of the Institute it has been possible to provide books and instruments freely and to maintain instruction in cutting models and mould loft-work. Also lecturers have been obtained by prominent men of the profession both in this country and abroad. Monsieur E. Bertin, Chief Constructor (retired) of the French Navy and Mr. S. W. Barnaby, a well-known English naval architect, were induced to make the voyage to this country to deliver lectures.

At present the Department is making investigation of problems of ship propulsion by aid of a navigable model forty feet long, and students have the opportunity of participating in such work.

SOME FACTS ABOUT M. I. T. (Continued)

(4) It has not concerned itself merely with technical education. It has done much to advance science in the broader sense. In its research laboratories work of the first importance is being accomplished, partly through the assistance of help from outside, such as that received from the Carnegie Institution at Washington. Among its graduates are men of world-wide fame in various branches of pure science, such as Professor George E. Hale in Astrophysics, Professor Noyes in Chemistry, Professor Jordan in Bacteriology, and Professor Pickering in Astronomy.

THE COSMOPOLITAN CLUB

By Isaac Hausman

In order to promote that breadth of view, open mindedness, and sympathy which are characteristic of the Citizen of the World, Technology men of all nationalities have united for their mutual social and intellectual benefit, and formed a Cosmopolitan Club. All students and instructors are eligible for membership, but the Constitution provides that natives of the United States shall not constitute more than one third of the student membership.

There are at present about one hundred members, representing thirty different countries from all parts of the globe. Therefore it is very readily seen that the Club has to offer many advantages, and a sort of an education that can not be obtained elsewhere. That Tech men realize this, is shown from the fact, that all year there has been an "American waiting list" of men who desired to join, but could not, because there were all ready the allowable number of Americans enrolled.

The meetings take the form of "National Nights," and each nationality which has enough members is allotted one night during the year to entertain the other members in any manner which they see fit. At these meetings the customs and habits of the people of the various countries are described by some of the men from that particular country; others give examples of their native music; and often times stereopticon views of the country are shown. Following this, refreshments, usually typical of the various nations, are served. Here the members are given an opportunity to mingle with the others and exchange ideas and opinions, and to get better acquainted.

Some of the examples of these entertainments are the Latin American Night, the features of which were the abundance of the world famous South American music; the great number of ladies of the faculty present; and the general educational value of the entire evening. After this came the British Empire Night at which various parts of the Empire were described and illustrated by slides. The prominent features were the description of the New Zealand method of kissing, and the yelling of the odd "Maori War Cry," exactly as it is given by the natives.

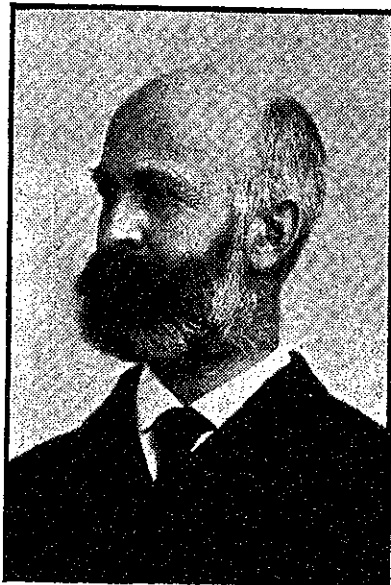
Chinese Night, the next one will be long remembered by those who attended. All the Chinese members wore their native costumes, a Chinese flute was played; queues, opium, marriage customs, Chinese humor (illustrated) were all explained and discussed. The climax came when one of the men gave an exhibition of Chinese magic. The Chinese tea, candy, and nuts, were extremely novel, as refreshments.

The other nights will be American Night, French Night, and Japanese Night. There is every indication that these will come up to the standard of the previous entertainments, which will indeed, make the record for the year a good one. Although the Club is only on its second year of existence, it will probably have a long life; as it has undoubtedly shown its value in many ways; and when Tech moves to a new site, the Cosmopolitans will have a club house and the opportunities and benefits of membership will thus be greatly increased.

ARCHITECTURAL COURSE

By Prof. F. W. Chandler

The Institute was the first school in this country to introduce a regular course in architecture, and it was among the branches first to be provided for. The Department was established and the chair filled on the opening of the school in 1865, but it was not actually opened to students until the beginning of the school year in October, 1868. No precedent for the association of architecture with a school of science at that time existed and the intermediate months were fully occupied in preparing the equipment and curriculum with which to make a beginning. The preparation had consisted chiefly in such examination as Professor Ware had been able to give to foreign schools of architecture, with some personal consultation with architects in this country and abroad, and in the collection of casts, photographs, drawings, and other materials.



PROF. F. W. CHANDLER

From its very beginning the Department of Architecture based its methods of instruction upon those of the French. Professor Ware says in the "Columbia University Quarterly," June, 1900, "But the little class which Mr. Richard Hunt started in the Studio Building in Tenth Street when he returned from Paris in 1857, eager to hand to on others the lamps he had there lighted, he of course conducted after the manner of a Paris atelier.

This class was the immediate parent of the school at the Institute, founded in 1865."

The principles of our architectural education were based on those of the French school because that nation more than any other of modern times has preserved and developed them in its national school at Paris. These principles demand the necessary artistic training through the atelier, which implies the closest association between professor and pupil. "All the courses might disappear, and the Ecole des Beaux Arts would still be the Ecole des Beaux Arts, while without ateliers, one cannot judge imagine the Ecole." Then the study of architecture at the French school is at first and above all artistic. It teaches the broad principles of composition and design, which are universally true and applicable, irrespective of style, country, or methods of building operations. The instruction is general, not specialized. It seeks to implant in the mind of the student the great truths that underlie architectural composition, to teach him to apply these truths by training his taste, developing his individuality and imagination. The system neglects neither science nor technique. The study of the laws and methods of construction holds a most important place. In a word, it endeavors to produce artists made useful through sound preparation in all the difficulties of the profession, giving them adaptability that will enable them to round out easily their stock in trade when later choice or circumstances will decide the direction in which their work shall lie.

We have added the Option in Architectural Engineering, as we believe that no man can be a thoroughly trained practising architect without some knowledge of engineering. We further believe that the most artistic students should have no excessive difficulty in absorbing the mathematics necessary to understand those structural necessities which are the basis of any worthy architectural design. The pupil is taught that unless the constructive principles of his building influence his design he is a decorator and not an architect.

SOME FACTS ABOUT M. I. T. (Continued)

(3) Its influence has not been confined to the higher branches of technical education. It is the heart of our system of industrial education, a system that must be vitally affected by the standards and ideals that the Institute maintains. It has already given directors to such institutions as the Textile Schools, the Franklin Union, and the Lowell School for Industrial Foremen. It must continue to supply men competent to direct the growth of industrial education, a growth that is expected to be unusually rapid within the next generation.

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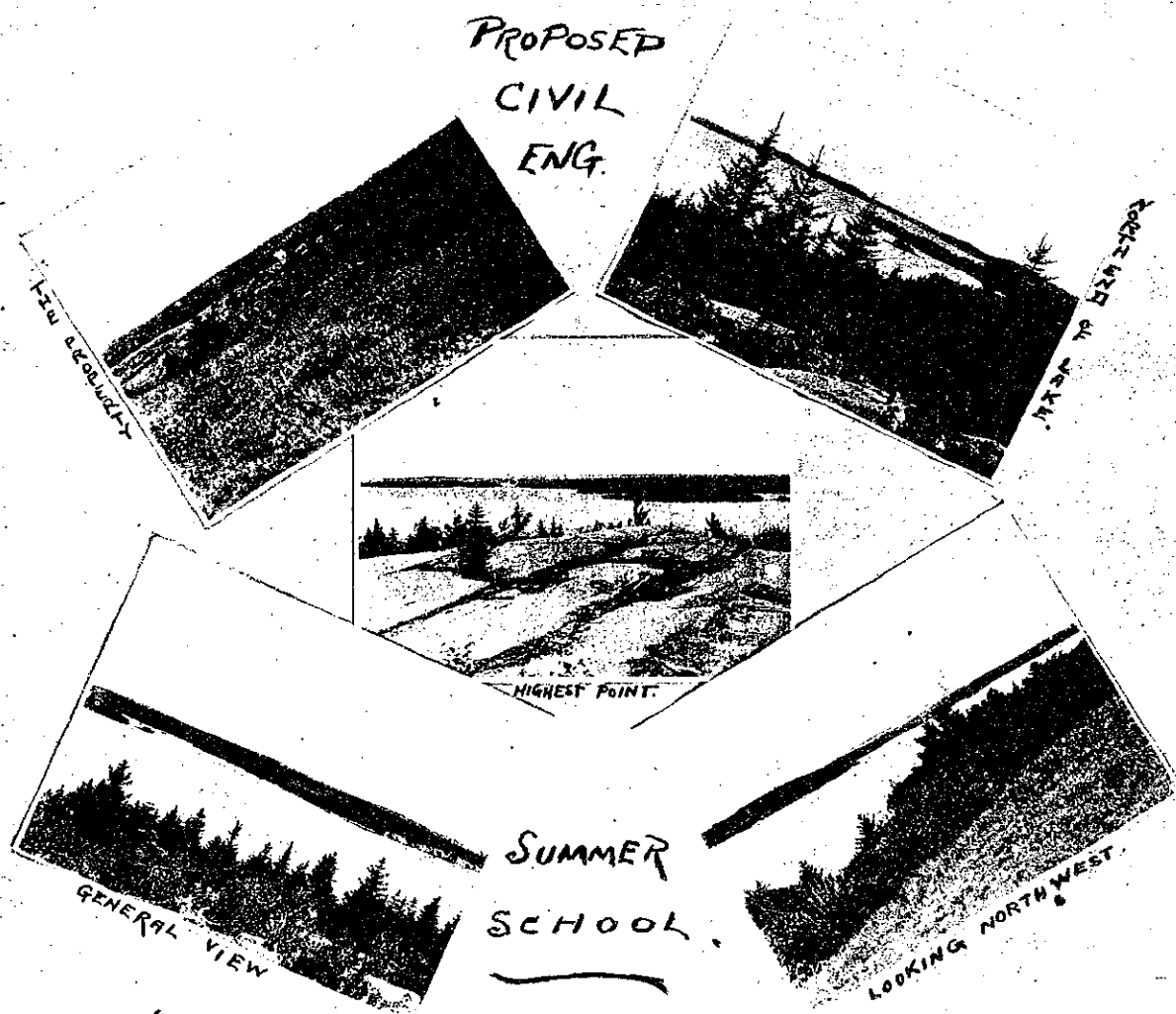
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CIVIL ENGINEERING SUMMER SCHOOL



appointed to push the matter through rapidly. Last summer Professors Spofford and Robbins were given authority by this committee to look up all possible locations for the summer school. A large number of places in Maine and New Hampshire were visited and after long consideration the choice narrowed down to two possible sites, East Machias, Me., and another point about five miles to the east of this on the east shore of Gardner's Lake.

Within the past two weeks this latter site has been bought by a prominent graduate of the Institute with the idea of turning it over to the Institute. He has made no formal offer to the corporation but it is expected that he will do so in the near future and that the matter will be considered at the next meeting of the corporation. If they do decide to accept the proposition the Institute will come into the possession of somewhat over 700 acres of land admirably fitted for the needs, and the final arrangements for the Summer School course can be pushed forward with great rapidity.

Gardiner Lake is situated in the eastern part of Maine, ninety miles beyond Bangor and thirty miles this side of Eastport. It is fourteen hours from Boston by boat.

The plot of land in question is a strip about a quarter of a mile wide, running along the east shore of the lake for a distance of three miles. The lake itself is six miles long by about one mile wide and of very irregular outline and is therefore particularly well adapted to hydrographic and plane table surveying. It is within three miles of tidewater, and within six miles of Machias Bay a branch of the ocean at which point a tide gauge could very easily be erected.

There are very excellent opportunities for stream gauging in the near vicinity, the Machias River at a distance of six miles, the East Machias, two miles, and the outlet of the lake directly across from the camp.

The nearest railroad station is across the lake from the camp in the town of East Machias and at a distance of about two miles. It is probable that a boat would be used thus making the camp very accessible from the town. The town of Machias is three miles farther west by rail.

For a number of years it has been the feeling of those in charge of the Department of Civil Engineering that it was imperative to have a summer school established at the Institute as a part of the required curriculum for the purpose of teaching surveying and allied subjects. This need was forcibly brought out by Professor Swain in 1907 when in a report he said:—

"The most serious problem confronting these Departments at the present time relates to the proper conduct of work in the field. There are two methods of carrying on such work: first, by making it a part of the regular work of the school year; and, second, by concentrating it in a separate school during the summer. The Institute has thus far adhered to the first method. In the early days, when classes were small and when the Back Bay was not built up, this instruction could not be given near at hand without waste of time; but it soon became necessary to take the classes into the country in order to carry on the work effectively....

"With the still increasing number of students and with the increasing pressure in the curriculum of other subjects to which more time ought to be devoted than has been found possible in the past, the question of the proper method of conducting field work, and the possibility of saving some of the time now devoted to it during the school year becomes a very pressing one.

"In some other schools in this country, the field work is given during the summer, leaving the school year free for work of other kinds. Harvard, Columbia, Cornell, and other institutions follow this plan.

"The advantages of carrying on the field work during the school year may be summarized as follows:—

"(1) The arrangement of the curriculum is somewhat simplified for the class room work and the field work can be arranged with close reference to each other and to the other subjects in the course.

"(2) The summer is left free for students and instructors, a fact which enables them both to devote the time to professional work. Many of the students depend upon earning enough money during the summer to go far toward paying their tuition for the following year.

"(3) It avoids the necessity of securing a site, and the trouble and expense of carrying on a summer camp.

"Some of the advantages are as follows:

"(1) By concentrating the field work during the six or eight weeks in the summer, the school year is left free for the many other pressing subjects which demand attention.

"(2) The student is not distracted from his more purely mental work during the school year by the necessity of giving a day each week, perhaps in inclement weather, to work in the field, which may leave him physically tired out, and interferes with the preparation of lessons for the following day.

"(3) It simplifies the arrangement of the tabular view, and releases a large amount of time during the school year.

"(4) The concentration of the work in the field should be attended with an increase in efficiency.

"It may be added that the desirability of such action will not be obviated by the removal of the Institute to any other location in greater Boston. Indeed owing to the close proximity of our present site to the railroad stations, a removal would be very likely to increase the desirability of the summer school plan."

The relative expense would not be increased by a very greatly increased as the number of assistants necessary for the school year would be considerably reduced. The increased cost of the Harvard Summer school is amply covered by the small fee of twenty dollars per student.

In his report of 1909 Professor Swain says:—

"The Institute should either purchase or lease a large tract of land... and should provide a summer camp, equipped to accommodate some one hundred and fifty students. Every student should be required to spend eight weeks at this camp four weeks to be devoted to the surveying field work now given in the second year and the remainder to railroad surveying and the other third and fourth year work.

The main considerations in selecting a site for a summer camp are as follows:—

- (1) Cost.
- (2) Accessibility.
- (3) Adaptability.

Under the third heading it may be said that the land should consist of a reasonably large tract of fairly cleared land and not too rough to be adapted to a railroad location. However, part should be varied enough in character to be suited to topographic surveying. For Hydrographic work it should be near the ocean or a large lake and in any case it is desirable to be near enough tide water so that work in tide gauging can be made. Finally it is necessary that there be a fairly large river for fourth year Hydraulic measurements.

For fully six years the Institute has been considering the question and two years ago a committee consisting of Mr. Leonard I. Metcalf, '92, Mr. Frederick H. Fay, '93 and Albert F. Bemis, '93 were



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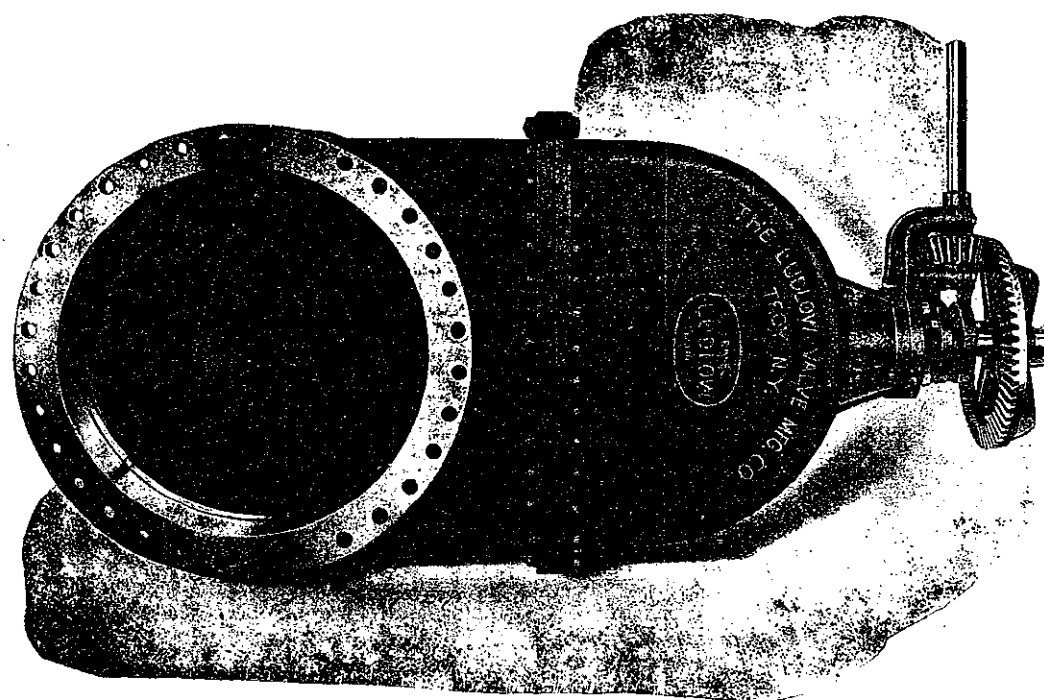
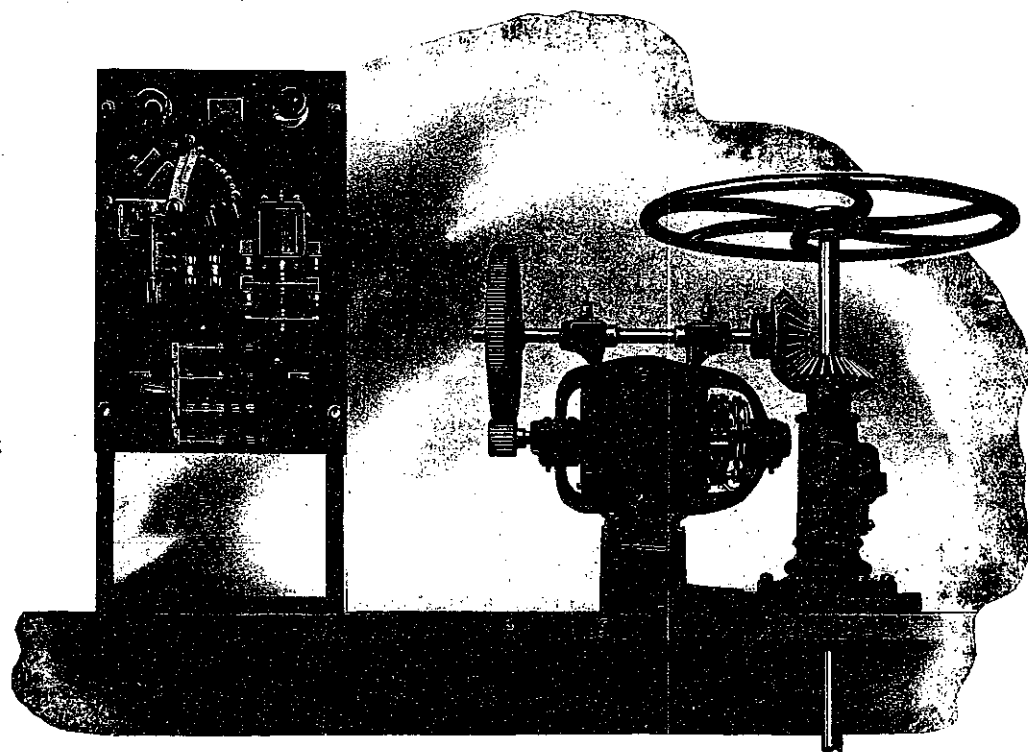
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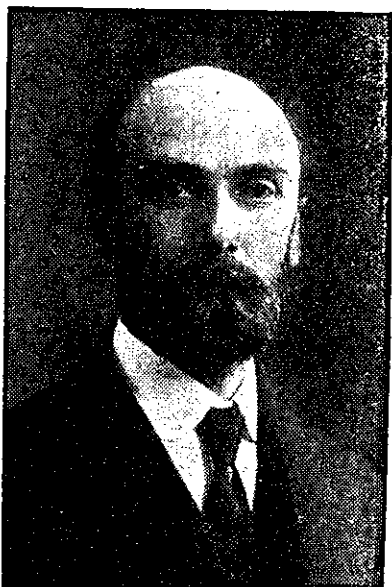
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CHEMISTRY AND CHEMICAL ENGINEERING

(Continued from page 15)

find Professor R. H. Richards temporarily serving as Assistant Professor of Analytical Chemistry and Professor William Ripley Nichols, to whom the Department owes so much for his successful labors in Sanitary Chemistry, as well as the gift of his library, entering the Faculty as Assistant Professor of General Chemistry. In 1871 Professor James M. Crafts took Professor Warren's place in Organic Chemistry coming fresh from the field of research, and gave an added impetus to the Department.

In 1873 the differentiation between the various professional courses began at the opening of the second year and the course in Chemistry was somewhat remodeled, and more time was given to chemistry in the second year. In 1873 Professor Charles H. Wing became a member of the staff and did much to place analytical chemistry on a more refined basis.



PROF. H. P. TALBOT

In 1878 the Women's Educational Association of Boston endowed the Women's Laboratory, which was then located in a one-story structure occupying the space now vacant between the Rogers and Walker Buildings. In this laboratory Mrs. Ellen H. Richards was instructor in chemistry and mineralogy and in association with Professors Ordway and Nichols carried on an immense amount analytical and experimental work along lines of sanitary and industrial chemistry which later formed the foundation for the development of these branches in our Chemical Department. In the same year three options, one in mathematics, one in natural sciences and one in industrial chemistry were offered within the chemical course.

The transfer of the Chemical Department to the Walker Building in 1883 placed it in temporarily commodious quarters and made possible a general development. Professor Lewis M. Norton then took charge of the Organic Chemistry and later of the Industrial Chemistry, and to him much credit is due for the development of these branches, and for inspiring teaching.

In 1885 Professor Thomas M. Drown became Professor of Analytical Chemistry and was soon placed in charge of the Department. He, in association with Mrs. Richards, developed the work in Sanitary Chemistry and during the next few years instituted and developed the elaborate system of examination of the water supplies of the State which was unique in its extent and thoroughness, and has served as a model for all later work along these lines in this and other states. Over 20,000 samples of water were examined and reported upon in the Institute laboratory, making it the leader of its sort, and after the work was removed to the State House, Dr. Drown remained until his death consulting chemist to the State Board of Health. Dr. Drown was also instrumental in gradually introducing a greater variety of specialized and optional subjects into the Chemical Course.

In 1888 as a result of a demand for a course which should combine chemistry with engineering, and after conferences of Professors Norton and Drown and the members of the Department of Mechanical Engineering, a Course of Chemical Engineering was announced which was under the charge of Professor Norton. This course was mainly one of mechanical engineering with a limited amount of fundamental chemical instruction. On

the death of Dr. Norton in 1893 the Course passed to the care of Dr. Drown and was united with the Department of Chemistry. For some time after the resignation of Dr. Drown to accept the presidency of Lehigh University, the Department remained without an officially appointed head. During that time the course in Chemical Engineering changed but little and the main change or note in the Chemical Course was the introduction in 1900 of five series of consistently arranged optional studies, of which three remain at present, one series involving mechanical engineering subjects having been abandoned when the Chemical Engineering Course was modified, and one in Metallurgy proving to be impracticable. In 1901 the Department was placed in charge of Professor H. P. Talbot.

After a careful consideration of the demands made upon the graduates entering the field of applied chemistry, as chemical engineers, it was determined in 1905 to remodel the Course in Chemical Engineering and to give it its present form, that of a course which is mainly one of chemistry with as much fundamental engineering as the time permits, the proportion of time devoted to chemistry being almost twice that devoted to engineering. Since then the course has undergone only minor changes.

As the foregoing outline indicates, the development of the Courses in Chemistry and Chemical Engineering has been gradual and apparently sound. The latter Course seems to afford a training which enables its graduates to fulfil the requirements of responsible positions in the industrial and engineering field. It is attracting a large number of students at the present time.

The Course in Chemistry meets the needs of those who would enter the field of municipal chemistry or enter control laboratories.

In addition to the growth of the undergraduate work of this Department there has been since 1893 a marked development of the post graduate work. Six students have obtained the degree of doctor of philosophy, and many others the degree of master of science. This has been mainly due to the establishment of two laboratories devoted entirely to research work. The first of these was the Research Laboratory of Physical Chemistry established in 1893 through the generosity of its Director, Dr. A. A. Noyes. This independent laboratory has maintained a corps of skilled investigators of the highest ability who have devoted their entire time to research work and most of the candidates for the advanced degrees have also been associated with this laboratory. Dr. Noyes has for a number of years received grants from the Carnegie Institution and these, with the funds from the Institute and private contributions have enabled him to direct and complete an unusual number of important and painstaking researches, as attested by the annual prospectus of the laboratory. The laboratory is unique in this country with respect to the large number of men employed solely upon chemical research.

In 1908 the Research Laboratory of Applied Chemistry was organized under the directorship of Dr. W. H. Walker, and now has a corps of five research associates and two post graduate students who are working upon chemical problems of general importance to the arts, and upon specific problems relating to certain industries, the latter being of such a nature that the industries concerned have not the necessary facilities or trained men requisite for their solution. Among the more general subjects of investigation may be mentioned the corrosion of iron, the manufacture of tinned plate, the structure of galvanized iron, the oxidation of linseed oil, and the effectiveness of paint films. The work of this laboratory has been largely made possible by the generosity of a member of the Corporation, Mr. C. W. Hubbard.

Considerable research work in Organic Chemistry has also been carried on under the direction of Professors S. P. Mulliken and F. J. Moore, and the influence of all of these research laboratories has been most helpful and stimulating to the members exclusive of the research workers and is providing instruction for nearly a thousand students yearly, and the business transactions of the Department, which are under the immediate charge of Professor A. H. Gill, amount to about \$15,000 annually.

With an unusually loyal and capable instructing staff, a large number of successful graduates, and a demand for others much in excess of the present supply, together with an increasing appreciation in the country at large of what the chemist and chemical engineer can accomplish, and an increasing interest on the part of our students in chemical engineering, the opportunities and outlook for the future of the Department seem unusually bright.

BIOLOGICAL DEPARTMENT

By Prof. W. T. Sedgwick

Some instruction in biological subjects was offered at the Institute from the very start, for we find that in the First Annual Catalogue, published in 1865, one of the six courses, namely, that in General Science and Literature included, nominally, at least, instruction in Zoology, Botany and Paleontology, as well as Physiology, and Comparative Anatomy.

General Francis A. Walker, on assuming the Presidency of the Institute, brought to it many of the ideas with which he had been impressed during his service as a professor in the Sheffield Scientific School of Yale College, and among others the conviction that a course in Biology preparatory to medical studies would prove useful.

To this end he invited the writer, who at that time was an Associate in Biology at the Johns Hopkins University, to come to Boston and undertake the new work, and in July of that year the necessary steps were taken by the formal appointment of the author as Assistant Professor of Biology at the Institute.

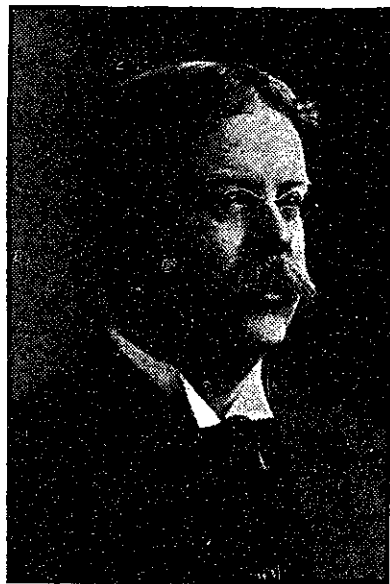
The Zoological instruction was given in the basement of the Natural History building by Dr. Alpheus Hyatt, Professor of Zoology, but all the rest of the Biological instruction was now put in charge of the new Assistant Professor.

The Department grew very slowly and for a number of years led a precarious existence. Owing to the unwillingness of the better medical schools in the vicinity to allow preference to men trained in Biology, the hoped-for developments along the line of preparation for medical studies was not realized, and it was not until the rise of Bacteriology, which began to make itself felt in the Department in 1886 and 1887, that any considerable progress was made.

In 1888 Professor Sedgwick was invited to become Biologist to the State Board of Health, and this appointment, together with the opportunities which it gave for research in the new Science of Bacteriology, obviously destined to be of immense importance in the world, gave the Department a recognition and importance which could not be overlooked.

The first graduate of the new Department to win distinction in Biology was

Mr. Edwin O. Jordan, of the class of '88, now Professor of Bacteriology in the University of Chicago, author of one of the most scientific and important manuals of Bacteriology hitherto published in the English language. The class of 1890 included the present Medical Adviser of the Institute, Dr. White, and Mr. John L. Batchelder, Jr., now one of the prominent business men of Boston and devoted in every way to the welfare of the Institute. The class of 1892 included A. P. Matthews, now Professor of Physiological Chemistry in the University of Chicago; Severance



PROF. WM. T. SEDGWICK

Burrage, Professor of Sanitary Science in Purdue University, Indiana; and Dr. A. M. Worthington, an instructor in the Harvard Medical School; and from that time forward many others of promise have come out from the Department as graduates, together with a host of college men and others not bearing the formal Institute hallmark, who have nevertheless borne out into the world with them Institute traditions, Institute training and Institute ideals.

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ELECTRICAL ENGINEERING SOCIETY

By Herbert Fryer

The Electrical Engineering Society dates back to October 25, 1888, when "the Junior Students in Electricity met for the purpose of forming an Electric Club." The object of the club was "to bring together persons interested in the study of Electricity for Discussion and Mutual Improvement."

It had its beginning in the early days of Electrical Engineering which was shortly branched off from the Physics Department. From the first the club held excursions to points of engineering interest and listened to lectures given by men of prominence in the Engineering World.

In the Nineties, the name of the Club was changed to the "Electrical Engineering Society." A new constitution which was adopted, somewhat broadened the scope of the Society. The object as stated in the present Constitution "shall be the discussion of Electrical and Allied Engineering Subjects, the advancement of electrical information and the promotion of good fellowship among its members."

It was formerly the custom of the Society to hold informal "smoke talks" but latterly these have given way to dinners, several of which are generally held in the Union each term. The final banquet of the year is generally held at a down town hotel and the Society secures a prominent engineer as speaker and guest.

In 1903-4 the Society cooperated with the local section of the American Institute of Electrical Engineers in several joint meetings held in the Old Union. The official emblem of the Society, adopted a number of years ago is a gold badge in the form of a Commutator.

With the growth of Course VI, the Society has become very large and the members themselves do not now present and discuss papers to the extent formerly done, it being considered more advantageous, with the larger membership, to call in prominent engineers actively engaged in the profession. For several years it has been customary to have the President of the American Institute of Electrical Engineers at one of the meetings. Prof. Jackson, head of our own Department, is now President.

The Society affords a social meeting ground for students of the upper classes and Instructors and promotes social intercourse between them. The Association particularly with the speakers, gives the members an idea of some of the things they will meet with after graduation and stimulates professional pride.

The active membership in this Society is limited to the upper classes of Courses VI, VIII, and XIV. Sophomores are eligible as associate members. Members of the Department, Faculty and a number of active engineers are honorary members. The present officers are L. P. Ferris, President; Kenneth Greenleaf, Vice President; Roy D. Huxley, Secretary; Herbert Fryer, Treasurer.

MECHANICAL ENGINEERING SOCIETY

By Foster Russell

During the first term of the session of 1881 and 1882, there prevailed among the students in the Department of Mechanical Engineering of the Massachusetts Institute of Technology, a feeling that their education would proceed more satisfactorily, if, after they had completed the work assigned to them in the school, they should take advantage of every favorable opportunity for self-culture.

On the 30th of November, a paper written by Mr. T. B. Carson, a member of the Senior Class in Mechanical Engineering, appeared in *The Tech*, proposing the organization of a debating society, of which all students of the school should be members. The proposed object of the society was, to give its members opportunity to gain skill in addressing an audience.

On the morning after the issue of Mr. Carson's paper, an energetic discussion was started by members of the Junior class in the Department of Mechanical Engineering, as to the propriety of forming a society whose members should all be connected with the Department of Mechanical Engineering. A meeting of the Department was held on the following Monday. It was called to order by Mr. Horace B. Gale. Mr. Frank Cheney, Jr., was elected chairman. A constitution, which had been prepared by Messrs. Horace B. Gale and George H. Bryant, was read. After some discussion it was

adopted, and the Sigma M. E. Society was organized. The name of the society, suggested by Mr. Frank E. Davis, will be recognized by students of mechanics as denoting the sum of all the forces of the Department.

The objects of this early society, as set forth on the constitution, were, the furtherance of a knowledge of subjects of mechanical interest, and the attainment of readiness in debate. During the semi-annual vacation of February, 1882, the society enjoyed a very instructive excursion through Western Massachusetts and Connecticut, and in January 1883 visited New York and Philadelphia.

The society has endured throughout the years carrying out its policy of helpfulness to the student by means of numerous lectures, papers, and excursions to various points of engineering interest. In November, 1909, an important epoch was marked in the history of the society through its affiliation with the American Society of Mechanical Engineers. Through this affiliation the students are admitted to meetings of the National Society, receive its *Journal* at a very low rate, and have other important privileges.

During the last year a movement started to obtain an official pin for student branches has been successfully pushed to a conclusion by the Technology Section, and these badges will soon be in use. At present J. A. Noyes is chairman, and R. M. Ferry, secretary of the society.

THE CHEMICAL SOCIETY

By L. M. White

The Chemical Society was organized over eight years ago in order to bring the men taking Chemical courses, into contact with each other in relations different from those of the classroom, and to bring them into contact with men who are accomplishing things in their profession. Originally the membership was limited to the students in Chemistry and Chemical Engineering, but now includes the courses in Biology and Electrochemistry.

For the meetings, the society tries to secure as speakers, men who are engaged in some form of chemical activity such as factory management and control, industrial and scientific research, etc. These men, in speaking upon subjects in which they are particularly interested, bring to the members ideas which they do not get in the classroom at all. They tell how something is made, or how an industrial research is carried on and thus give to the men a conception of what they will encounter after they leave the Institute.

After the lectures there is usually a discussion of questions raised by the members which serves to clear up any misunderstandings which arise. After the meetings the members have a chance to talk to the speaker individually and at least get an introduction to men who are accomplishing things in the line of Chemical activity. Keeping in touch with what is being done is a necessity in after life, and the Chemical Society affords an admirable place to begin.

A social hour is always held after each meeting in which the men in different years have a chance to get acquainted with each other and to discuss things of mutual interest. The social spirit is furthered particularly at the two banquets of the society, one held in February and the other in May. Enthusiasm always runs high at these gatherings and good-fellowship prevails.

SOME FACTS WITH REFERENCE TO THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

(1) The M. I. T. has been a pioneer of higher technical education in this country. It has formed the model for many other similar schools here and abroad. Speaking in London with reference to it, Sir William Mather said, "The spirit and energy of the students, their conspicuous practical knowledge, the thoroughness with which their scientific knowledge is tested in the course of instruction, and the power of adaptation and resource they possess on entering workshops and manufactories, railroads or mines, public works and constructive engineering,—all these fruits of the training of this Institute are, so far as I have seen, not equalled on the Continent. I think these are the qualities we need in England."

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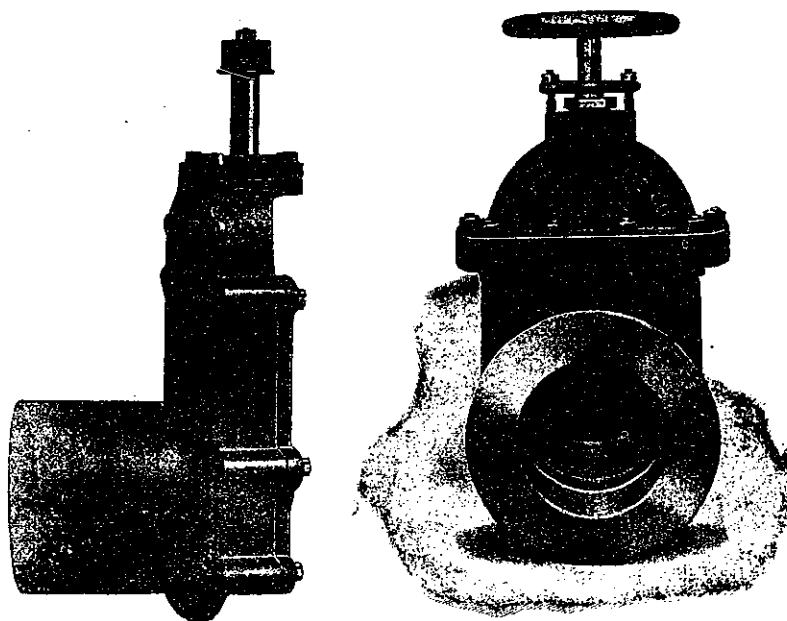
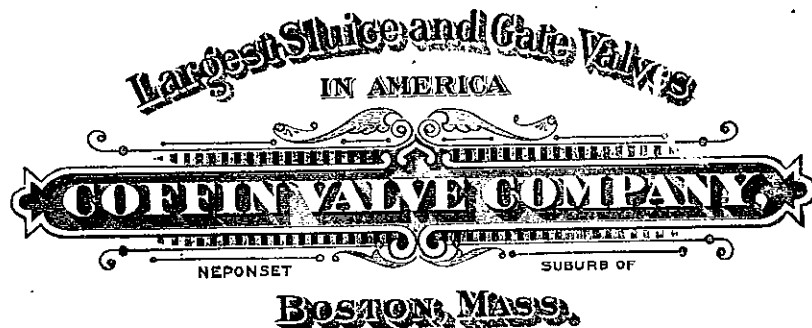
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THE YEAR WITH THE ATHLETES

October 1—Crew started work again with a good bunch of men, but only small cross country squad answer first call at Hyde Park. Freshmen and Sophs report at Field for class relay and football.

8—Tennis team badly beaten at Hanover. Dartmouth takes everything.

12—Sophs lose the first football game to Dean, six to five.

19—Freshmen repeat with Dean, getting short end of 57. Wake up, 1914, before Field Day.

22—1912 wins the Fall Meet with Seniors a close second. Freshmen don't look classy as athletes so far. Here's hoping. The time for that quarter looks good.

26—Freshmen football team lose another, this one to Somerville. Just two too many touchdowns for them.

29—On the Harvard course the Cross Country Team loses to Harvard a close race 36-43.

November —FIELD DAY. Oh, where is our swimming team? In a pouring rain the Sophs wash the Field clean of Freshmen. Too much class in everything. Brown takes slow, uninteresting cross country race. Score:—Brown 29, Tech 34, Tufts 85.

5—Major Briggs resigned his position on Council at the Field Day Dinner in the Union. Dr. Rockwell takes his place.

21—Basket Ball Team makes a good start on the long road with a victory over Boston College 46-35. Fair crowd.

23—Basket Ball Team given sendoff on New York trip; they win from Brooklyn and lose a very close game to City College.

January 2—Hockey Team win fast game from Dartmouth by two goals. Pretty work that, Dick Gould.

6—Seniors get an easy first in the Indoor Meet. Freshmen at the bottom again though tied with Sophs this time. Hockey Team leaves on its Western trip; loses to Loudon Field Club 6-4.

7—At Hanover in the last game in Dartmouth's old Gym the Basket Ball team lost by two goals. Hockey Team won from Loudon Club 5-4.

11—At Athletic Association, Track Captain Salisbury made first move toward replacing the old "We are happy" by a new cheer.

Mid Years

During the recess the Basket Ball Team on its western trip lost three straight. Scores were close and small but it looks bad for Parker's Pets. Hockey Team won from Aggie by one point. One mile relay did some fine work in winning from Harvard in such fast time at Providence.

24—Hockey Team plays fastest game of the season only to lose to Halifax by two goals at the end. Good work and hard luck! Gym Team wins from Salem by a big score.

28—Basket Ball Team closed season by winning last game from Tufts, at Medford. R. S. Schar elected captain for next year.

March 11—Sophs take second inter-class basket ball game from 1914. Score: 19-16. First Hare and Hounds of season for both class and Varsity Teams. Gym Team enter meets at Newton and trims Harvard.

17—Track Team Dinner at the Union brings out a good bunch of men who hear outline of hard schedule for the season.

22—M. I. T. A. A. take important step when they give the Advisory Council right to remove insignia from a man after trial for cause.

28—Class Baseball men show up at the Field for the first time.

30—Swimming Team in first real meeting ties up score with Brookline Gym.

ELECTROCHEMISTRY

By Prof. H. M. Goodwin

The course of studies laid out to prepare students to enter the profession of electrochemistry was first announced in the Program of 1901 and was at that time the only course of its kind offered in this country. It was first designated as the electrochemical option of Course VIII, but in 1909 the title was changed to "Electrochemistry—Course XIV," by which number it is now known. The Course aims to give a thorough training in the fundamental principles underlying the professions of Electrical Engineering and Applied Chemistry, this combination of studies being essential for a complete understanding of the electrolytic and electrothermal industries which are being so rapidly developed at the present time. This advance is due in part, first, to the great progress made in Electrical Engineering and the development of hydro-electric plants by which electrical energy has become available in larger quantities and at reduced cost; second, to the economies which result from replacing older processes by electrochemical methods; and third to the discovery of a number of new electrothermic products formed in the electric furnace.



PROF. H. M. GOODWIN

The characteristics of the curriculum of studies in the Course in Electrochemistry as at present arranged, are, first, a thorough training in all of the fundamental Electrical Engineering subjects common to that Course, and an equally thorough training in analytical, theoretical and industrial Chemistry. In addition

to these subjects is the strictly professional work in Electrochemistry itself, extending throughout the fourth year, and as much of such engineering subjects as drawing, mechanism and steam engineering as time will permit. An insight into assaying and the principal metallurgical processes is also included. To satisfactorily complete this program of work in four years requires good ability on the part of the student both in mathematics and laboratory manipulation, and only students possessing such qualifications are advised to elect the Course.

Up to the present time the Course has graduated twenty-eight men, all of whom are doing good work—in some cases exceptional work—in this country, Canada and England. The increasing demand for men with the training outlined above has justified the expectations of the Department of Physics in establishing the Course at the time it did.

BIOLOGICAL SOCIETY

By H. E. Babbitt

The Biological Society is one of the youngest of the professional societies which confines its membership to particular courses at the Institute. Active membership is thrown open to courses V, VII, and XI, and associate membership to any one else connected with the Institute and interested in Biological or Sanitary subjects.

During its short career the society has attained considerable success in the accomplishment of its aim, which is the advancement of knowledge and practice of Biology and Sanitary Science, and the better acquaintance of its members. The knowledge and practice of the professional subjects has been advanced by lectures from prominent scientists and engineers who have addressed the society at some of its numerous dinners. Such representative men as L. Lyman Underwood, W. T. Sedgwick, H. W. Clark, Geo. C. Whipple, and others have spoken and related the best of their practical experience to the society. The better acquaintance and good fellowship has been attained through the Noise Committee, which by its originality and versatility has won for the society considerable fame and attention.

In order to relieve its officers from an excessive amount of work, and to divide its hours and interests more evenly, the society holds elections twice a year. The past year has been an unusually successful and interesting one, and has proven the necessity of such societies to the success of undergraduates' work. It has also given great encouragement to those interested in the society's future, as it would point to a very bright continuance of its activities. Under the able leadership of Pres. H. P. Ireland, Course XI, 1911, during the first term, and Pres. S. M. Schmidt, Course VII, 1911, during the second term, the most valuable and entertaining of meetings have been held.

The membership of the society is unlimited. It consists at present of about forty active, twenty associate, and fifteen honorary members. The majority of the active members are in the senior class.

The society plans for the future a hearty cooperation in the Congress of Professional Societies on April 12 at which it hopes to have every member present, and to enliven the affair by some original songs and cheers. During the week of May 8, the annual dinner will be held at some suitable hotel in Boston. It is planned to make this a brilliant affair, up to the usual standard of the annual dinners of the professional societies at the Institute. It is hoped that Mr. Goodnow, Chief Engineer of the State Board of Health, Prof. Sedgwick of the Department, Mr. J. L. Underwood, the malarial mosquito expert, Mr. Scott P. McNutt, and others will be the speakers on the occasion, and many other prominent scientists will be present.

Some Facts

The M. I. T. has trained a large number of men who have taken a leading part in advancing the nation's industries and commerce. Through their technical skill they have been employed in every State in the Union in the work of developing mines, opening up the country by means of railroads, applying scientific methods to the great problems of transportation, power production and distribution, advancing chemical industries, conserving the public health, and contributing in countless other ways to the national well-being.



M. I. T. ATHLETIC ASSOCIATION

8—Sophomores establish new track record for relay in time trial; they make 4 min. 59 3-5 sec. for the 1 1/2 mile against a picked team.

12—Technology takes fifth place at the I. C. A. A. A. cross country meeting, making good time. Benson, '12, elected captain for the coming year in place of Watkins, '12.

19—Handicap cross country: Shedd, '14 takes first, Nye, '14 gets second, and the time prize. Good running Freshmen!

25—Hockey Team gets into Arena for the first time to practise; we shall expect much, now that they have steady work and no waits for ice.

December 3—Crescents win from the Hockey Team seven to six. Hard luck! That's only the first game, but get going.

6—Manager Chandler introduces training table at Union for basket ball men. Never been done before and a good stunt!

7—At the Fall Track Dinner it was announced that Salisbury lead Du Pont Cup competition with over 200 points. Good luck! Oh you all-round athlete.

14—Hockey Team loses another, Harvard this time by only one goal. They were well supported by the rooters, too.

20—Nobody was interested in the Gym Meet and so nobody went; Allen showed his usual good form.

February 4—Freshmen score their first victory against the Sophs in track meet by some fifteen points. Williams takes three baskets too many from the Varsity at Williamstown.

11—Relay Team wins again; Dartmouth the victim in a very fast mile at the B. A. A. games. Wilson, a speedy Freshman gets third in forty yard dash and Dalrymple second in the high jump. Hockey and Basket Ball men have a bad night in Providence for they both lose their games.

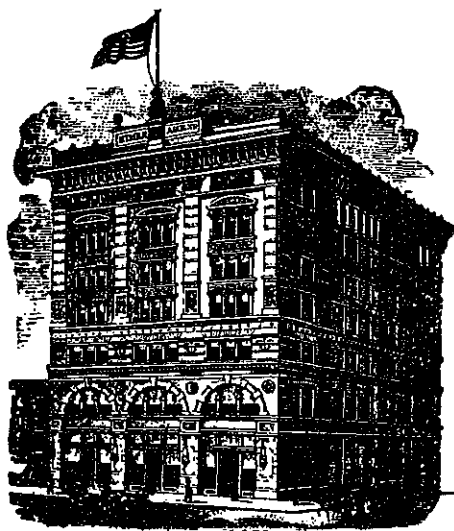
16—Williams comes to Arena to lose to the Hockey Team a very slow, dead game. Score:—12-3.

17—Break in the Basket Ball luck at last and team wins from Tufts 31-13, showing very good form, but lack of coach is still very much evident. Gym Team have meet with Amherst but they lose. No interest among the fellows.

18—At the N. Y. A. C. games in New York the Relay Team defeated both Cornell and Syracuse easily, making the very fast time of 3 min. 29 sec. Lots of speed there, all right 1914 loses track meet to Brookline High by two thirds of a point. Too bad Guething was not here!

21—Athletic Association admitted the Swimming Team. Chess or Bridge team next? Good luck you water boys, show your worth.

22—Dartmouth takes the holiday game from the Varsity 35-8. Worse and more of it. And the two mile relay team lost to Cornell, too. 1914 lose in basket ball to the Sophs 27-5. Get going you Freshmen!



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TECHNIQUE, 1912

TECHNIQUE first made its appearance at the Institute in 1885. It was called "Technique 85" but it was published by the class of 1887. Although it was but a pamphlet in form containing only 152 pages, yet it showed that there was a demand for such a publication. Two years later the editors of "Technique 1889" offered a cloth bound edition which proved to be very popular and from this time on the book has been improved upon until today it ranks as one of the best college annuals in the country.

The Board of Editors are elected by an Electoral Committee which is chosen by the entire Sophomore class and from among the members of the class. Great care is taken in electing men to the Board who are well up in their studies and although the Electoral Committee usually meets for their first meeting soon after the second term, it requires two meetings a week from then until the end of the year to elect the whole board of sixteen or seventeen men. Every man nominated is required to leave the meeting room while his name is discussed and a searching examination is made of everything which points towards his desirability or undesirability for the position to which he was nominated. The three most important positions on the Board are Editor-in-Chief, Business Manager and Treasurer. The first named has complete oversight of all the departments in the book besides writing the various special articles and proof-reading every bit of material before it goes to the printer. It becomes his duty then to personally supervise the arrangement of pages and the final printing of them as well to decide as the color scheme to be adopted.



H. E. KEBBON
Editor-in-Chief

The Business Manager has complete charge of all the advertising in the book issues all contracts, supervises the work of his assistants assigning them work to be done and is responsible for the financial success of the book.

The Treasurer handles all the funds, has the supervision of the selling of the books and issues and collects all bills contracted in the publishing of the book.

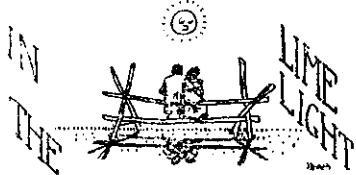
The Technique Board 1912 started in on its work immediately after the Institute opened after the summer vacation with Harold Eric Kebbon as Editor-in-Chief and David Fry Benbow, Business Manager, and it has held weekly meetings until the New Year after which time they were held twice a week. The Board has worked together wonderfully well, everyone with but few exceptions doing his allotted portion and a fine spirit of close cooperation has always been evident. The Art work this year is exceptionally good as you will all agree when the book makes its appearance and the cover design is the best that has

ever adorned a TECHNIQUE. The man to whom the book is dedicated is one whom everyone knows and who thoroughly deserves this honor. The photographs of the various athletic teams which have brought so much credit to the Institute are especially fine. A special article will prove to be of great interest to all Tech men. A few changes have been made in the arrangement of the book which will serve to increase its popularity.

In short the Technique Board feels confident that the book this year will meet with the entire approval of every Tech man and will be a culmination of all the good points of previous Techniques with the addition of certain features which will make it the best TECHNIQUE ever published. The Board urges it upon everyone that they sign up immediately as the edition this year for various sound reasons is limited. The Technique Rush will be held on April the eighteenth and it bids fair to be a strenuous one.

The Board is as follows:—

Harold Eric Kebbon, *Editor-in-Chief*
David Fry Benbow, *Business Manager*
Donald Earle Bent, *Treasurer*
Gurdon Irving Edgerton, *Art Editor*
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The Cosmopolitan Club are planning to have a Reception at the Union directly after the Show on Thursday Afternoon ~~THE SHOW~~ ————— ~~THE SHOW~~

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The Spring Concert begins at 8 P. M. Sharp!

ALUMNI, Don't forget your class dinners to-night. See the front page of this Issue for Full Particulars.

All kinds of Athletic Stunts will be pulled off at the Field this afternoon. Everybody be there and see the fun.

Of the 1,479 students at the Institute in 1909-10, 852 or 57.5% of the whole were from Massachusetts.

Last June, 19 candidates were recommended for the degree of Master of Science, and 132 for the degree of Bachelor of Science.

For each instructor at the Institute there is an average of seven students.

Metcalf sells to Tech students each year about 2,050 gallons of milk-shakes, or enough to fill a pipe three inches in diameter and 1.3 miles in length.

The registration for 1865-66 was 72, for 1909-10, it was 1,479.

The oldest living graduate of the Institute is Professor Robert H. Richards of the class of 1868.

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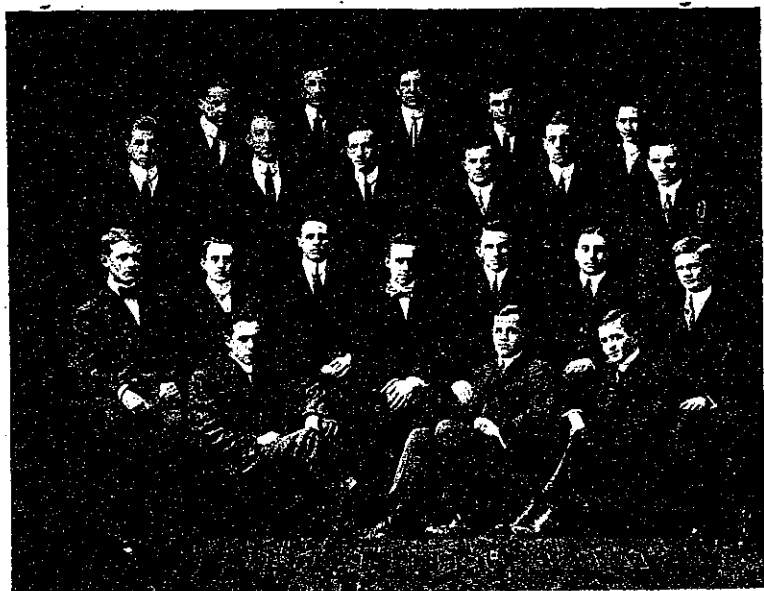
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INSTITUTE COMMITTEE

By R. H. Ranger

Colleges and universities throughout the country have all their student governments, but it is doubtful if there is any place which has one that reaches the efficiency of the Institute Committee here. The Institute Committee started with the class of 1893 as a body capable of only minor suggestions. With the year 1907-1908 largely through the influence of Harry William Hoole 1908 who was then editor-in-chief of "The Tech" the committee was reorganized and energized with results that are common to us now. It was then brought about that the heads of all the important activities were placed on the Institute Committee. Last year saw the latest development of the Institute Committee by the direct vote of all the activities at the Institute to support the point system in particular and in general all regulations proposed by the Institute Committee.

The main institution now enforced by the Institute Committee is that of the Point System. This system has proved its usefulness in bringing out a large number of men for activities and thus giving the benefit of the same to a large number and preventing over indulgence by a few to a neglect of their studies. There are now enrolled in activities more than one third of the student body.

The latest work of the Committee has been the organization of the Finance

Commission. This Commission receives financial reports from all the activities each month and sees to it that the name of the Institute is not marred by financial weakness of its activities.

With the creation of the Union many new opportunities presented themselves for energetic work on the part of the committee. This is carried on through the sub-committee of the Institute Committee, the Union Committee.

As it now stands the Institute Committee can be compared to the organization of the parliament in England. There is no direct written constitution authorizing all the powers of the Committee; it is merely by the common sense of its own actions that it is respected and that its power continues. As it is now made up in the Institute Committee has the benefit of those best informed of Institute work. This is brought about by the selection of representatives to the committee of the heads of the activities among which may be mentioned Tech Show, The Tech, Technique, Musical Clubs, Tech Christian Association, and the engineering societies.

The committee has so far filled a very definite purpose and there is every aspect of its continuing to do so in the way of looking out for the best interests of the students in their relations to each other, the Institute and the Faculty.

SOME INTERESTING FIGURES.

Higher education is self-supporting only under very exceptional conditions. Whenever it is made so there must be either inadequate or underpaid instruction, or the tax upon the students must be excessive. No modern state can afford to have higher education restricted to those who can bear its cost, or to let it depend upon the accidents of private generosity. The extent to which students in different parts of the country pay for their own education in engineering branches has been recently investigated on behalf of the University of Nebraska, with the following results:—The figures cover all fees except laboratory charges for four courses.

Univ. of California	\$32
Univ. of Nebraska	34
Univ. of Kansas	50
Univ. of Colorado	65
Univ. of Illinois	110
Univ. of Minnesota	120
Univ. of Missouri	120
Univ. of Wisconsin	140
Univ. of Michigan	508
Yale University	514
Cornell University	716
Harvard University	716
M. I. T.	1000

The students of the Institute contributed towards the income in 1909-10 more than \$335,000, or nearly 60% of the total income.

Scholarship funds at the Institute now amount to more than \$334,000 besides the state scholarships and the Edward Austin fund of \$375,000, which is largely employed for this purpose. These represent the admirable generosity of private givers to needy students, but to every student who receives a full scholarship the Institute must make an additional contribution nearly as large as the scholarship. The education of the student at the Institute for the four year course costs about \$1,900. Of this amount the student pays \$1,000, the state about \$60, the United States about \$40, while the remaining \$800 represents present or past generosity of friends of the school. If the state grant is increased to the extent desired it will still represent a contribution of only about one-sixth of the annual outlay, or one-eighth of the total cost.

Additional free scholarships would help the students but increase the burden on the school.

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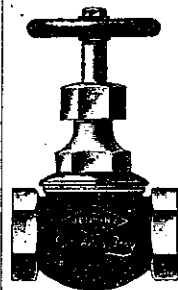
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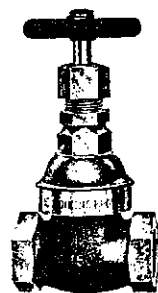
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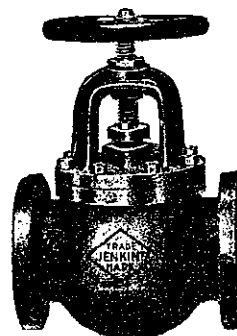
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THE TECH

VOL. XXX. NO. 129

BOSTON, MASS., TUESDAY, APRIL 11, 1911

PRICE TWO CENTS

SOPHS WIN CLOSELY CONTESTED INTERCLASS MEET

By a score of 60 1-3 to 56 2-3 the Sophomores defeated the Freshmen in the spring inter Class track meet at Tech Field, Saturday afternoon. The Freshmen were more successful in the cross country run, winning that by a score of 23 to 55. The times in many of the events, were poor on account of the strong wind which was blowing. McLeod '13 was the individual star of the meet winning three firsts and one second; a total of 19 points. The next highest point scorers were Wilson '14, with a total of 10 points, and Guething '14 with a total of 8 points.

In the 100 yd. dash, Wilson '14 easily pulled away from the rest of the field and finished many feet in the lead. A few minutes later he also nosed out a head of Guething in the 220. In the mile Germain had everything his own way, as did Byland in the half mile. The greater mile was one of the most exciting races of the day. Guething just keeping ahead of Thompson all the way around.

About this time the cross country runners came upon the field, Shedd leading with Nye Lee and Newton following in close succession. In the high hurdles Fox started off well, but came to grief near the last hurdle and had to content himself with third place, Strachan taking first. Munch ran away with the low hurdle event. In the meantime the competitors in the field events were having troubles of their own. Hall won the high jump, Rankin the pole vault, McLeod took the discus and shot put, while Owen got the hammer throw. As the final event of the day the interest centered in the broad jump, and when McLeod took this event it decided the meet in favor of the Sophomores.

Summary:

100 yd. Dash. Won by Wilson '14, Trull '13, second; Thompson '13 third. Time 10 4-5 seconds.

Mile Run. Won by Germain '13; Nute '14 second; Turner '14, third. Time 5 min. 2 seconds.

440 yd. Dash. Won by Guething '14; Thompson '13, second; Haynes '13, third. Time 53 4-5 sec.

220 yd. Dash. Won by Wilson '14; Guething '14, second; Thompson '13 third. Time 24 3-5 seconds.

880 yd. Run. Won by Byland '13; Sampson '13, second; Stubbs '14, third. Time 2 min 6 2-5 seconds.

120 High Hurdles. Won by Strachan '13; Bryant '14, second; Fox '14, third. Time 19 3-5 seconds.

220 Low Hurdles. Won by Munch '13; Fox '14, second; Bryant '14 third. Time 28 3-5 seconds.

High Jump. Won by Hall '14; Eberhard '14; Chase '14, and Fallon '13 tied for second. Height 5 ft. 1 inch.

Pole Vault. Won by Rankin '13; Hurlbert '14, second; Heroult '14, third; Height 9 ft. 6 in.

Discus Throw. Won by McLeod '13; Brown '14, second; Owen '14 third. Distance 91 ft. 7 in.

Hammer Throw. Won by Owen '14; McLeod '13 second; Heroult '14, third. Distance 96 ft. 6 in.

Shot put. Won by McLeod '13; Wright '13, second; Freeman '13, third. Distance 34 ft. 6 in.

Broad Jump. Won by McLeod '13; Hadley '14, second; Bowler '14 third. Distance 19 ft. 1-2 in.

Summary of Points.	1913	1914
100 yd. Dash.	4	5
220 yd. Dash.	1	8
440 yd. Run.	4	5
880 yd. Run.	8	1
1 mile Run.	5	4
120 Hurdles.	5	4
220 Hurdles.	5	4
High Jump	1 1-3	7 2-3
Pole Vault.	4	5
Discus.	4	5
Hammer.	3	6
Shotput.	9	0
Broad Jump.	5	4

Total '13 60 1-3. '14 56 2-3.
Cross Country. Won by Shedd '140 Nye '14, second; Lee '14, third; Newlin '14 fourth, Sutherland '14; fifth, McDonald '13 sixth.

Time 25 minutes 4 3-5 seconds.

FIELD DAY

FULFILLS HOPES

Enthusiastic Fellows and a Few Girls Make a Success

FOUR GOOD STUNTS

Tug-of-War, Base Ball, Relay and a Soccer Game, Cause Live Day.

An even dozen of the fairer sex gave color to the first Spring Field Day that has ever been pulled off by the 'Stujs. The students showed up in bunches and they all seemed to be full of life and enthusiasm, interested in all that was going on and every body took an active and an acting part in everything. The tug-of-war had about everybody that was at Field on one side or the other before the pulls were over and there was even more excitement than there has been often over the same event on Field Day in the Fall. Base Ball with the assistance of the two classy umpires took on the appearance of a second rate burlesque show but the fellows who played had a fine game even though it could hardly be called baseball. The Relay Race was the only thing that resembled a real track meet, for the finish was close and the whole race was a seesaw from the start in the first hundred yard dash.

Soccer was (well we liked it but—the last thing on the bill and it wasn't) appreciated as much as some of the others for that reason, but all the same it was the funniest thing that happened all during the afternoon and if you could have seen Arch Eicher kick "Tunny" Barker in the face during game you would be perfectly willing to believe that Field Day was a success. The sun shone and all Technology made merry for the better part of the first of our two holiday afternoons.

At ten minutes of three the gun was pulled on the starter of the joy stunts, the tug-o-war. There were even twenty five men teams in the first pull and the 1911—1913 bunch had it on the 1912—1914 combine and pulled them across the line in less than a minute and a half. The other pulls were not to go the way of this one for the rope was taxed to the limit by the men who piled on wherever they could get hold and pulled till the rope nearly parted and the Junior-Freshman bunch had won the event by taking the last two pulls from their opponents.

The Relay Race, which was run in between the two parts of the base ball game, was perhaps the star event of the afternoon and won after a very close finish by the Sophomores. Cummings took the lead in the hundred and passed it over to Dick Gould who kept it with Wilson very close on his heels. Then in the four-forty Guething by some very clever running got by Salisbury and brought the Freshmen to the front. Nye, running for 1914 kept the lead in the half for a lap but was at last passed by Pete White and the Seniors again lead, but for the last time. Davis proved too slow for the speedy long distance men of the two lower classes and he was soon passed by Shedd and Germain. They elbowed each other along throughout the entire mile, with Watkins far far behind and Davis as well, entirely out of the race until Germain pulled out a victory by a length of open water.

The soccer game consisted largely of everybody running round and kick the ball or else kick at the ball. It seemed to be mostly the latter for every time we looked at the game somebody was getting one somewhere. Pete White had a little game all by himself when he tried to play with a little brown dog on the field. The game ended amid wild excitement and if you want the score

Continued on Page 3.

TECHNOLOGY CONGRESS OPENS WITH CONVOCATION

Pres. Maclaurin Addresses a Large Number of students on the fiftieth Anniversary

Yesterday afternoon, as the opening day of the Technology Congress, President Maclaurin took the occasion to address the student body in Huntington Hall. Immediately after one o'clock the Hall was rapidly filled, and, with the usual Tech spirit, the fellows yelled and sang until the President appeared on the platform.

In his introductory remarks President Maclaurin said that in the few minutes in which he had to speak he wished to point out some of the special and most note worthy features of the Massachusetts Institute of Technology and explain why Technology achieved such distinguished success, not only as a school of applied science, but as a leader in new and revolutionary ideas in education. He said in part,

"In the State House the memory of all of the Governors of this State are dedicated either in marble or in portrit. To-day the marble statue of one should be of interest to all Tech men, that of the great War Governor, Andrews. It was Andrews, who, on the eve of the Civil War, signed the Charter of the Massachusetts Institute of Technology. But the war prevented the opening of the Institute until late in 1865, and then, despite the crippled condition of industries and the financial depression of the entire country, the school immediately prospered.

There are many causes which have contributed to its success. Its method, of instruction, the devotion of its Faculty to the loyalty of the Alumni, the completeness of its equipment, and the variety of the courses, the industry its students, have all lent to that success; but it was the foresight of its founder, and time in which the Institute was founded that counted more than any thing else for the success which it has attained.

President Rogers conception of the M. I. T. was a new venture. While not a Boston man, or even a native of New England, Rogers chose Boston as the seat of this institution because he believed that his ideas would receive more liberal support at the center of American education than in some new community.

It was a time of great intellectual upheaval. The works of Darwin had just been published, and Faraday's great discoveries were exerting a profound influence on the mind of Maxwell. It was the beginning of the practical application of Science. Edison was then living in Boston, and Bell was experimenting on the electric transmission of speech.

President Walker believed that education should make a man a useful member of society, and the new times demanded new men, trained in new schools. To train men in the practical professionse Walker believed that the scientific habit of thought should be cultivated, and that the only way be which this end could be attained was in "Learning by Doing". Accordingly the Institute was the first school to be equipped with a Physical laboratory and here the laboratory system was first developed.

The educational ideals of the M. I. T. have by many been regarded as antagonistic. This view, however, can hardly be held when one considers that this Institute is the fore runner, and in many respects, the standard of all technical schools in the country, and that men from the Schools of England, France, and Germany come here to study in our laboratories and observe our methods. Indeed the work of our ten thousand graduates, and the influence we have exerted on education of methods places the Massachusetts Institute of Technology foremost among the leaders in education.

C. E. TRIP TICKETS

ON SALE FOR OUTSIDERS.

Large number of Applications Received from other Courses; to be filled from now on.

RUMORED INSTRUCTORS CONSPIRACY

In spite of the fear of Sea-sickness almost all the Tickets have been sold.

The big trip of hustling Civils is now almost an assured success, if the weather man will but handle the valves right and turnout a nice specimen of this 57 varieties of weather for Saturday next. The local drug stores have laid in an extra supply of jamaica ginger and other guaranteed preventers of mal-de-mer. Just in case the wind is no'th-east and the seas running high, many a lubberly wretch is hesitating about getting his ticket. Take up on you back-stay, my hearty, and come aboard.

That some of the other Courses have good sailors and venturesome explorers in their ranks is evident from the fact that the committee in charge of the trip has recieved a number of applications for tickets from outsiders. The Electrical and Mechanicals have been best represented up to date. These applications will be filled from now on until the limit of the party is reached. Members of the Civil Engineering Society have had first chance for tickets all the past week. The remaining tickets will now be sold to all-comers, first come, first served.

Many of the members of the instructing staff are showing their sporting blood by hastening to join the fun. Already all the assistants in the Department have parted with their two dollars for tickets and, confidentially, we expect that they will part with their breakfasts about 10 A. M. on April 15th. It is whispered about, that the assistants have a secret agreement that the first man sick will correct all the papers in Railroads, Surveying and Structures for the rest of the month. This in only a rumor, however, and the Tech reporter who ventured to inquire about it, in the office of the assistants was chased therefrom with due threats of vengeance if he dared to even mention such a thing again.

Just a word about the Canal trip itself. The Cape Cod Canal is being constructed by contract work under the direction of the New York and Cape Cod Canal Company. It is to be a sea-level canal, that is there will be no locks or obstruction of any kind from one end to the other. It is to be eight miles in length and runs nearly straight from Sandwich on the Massachusetts Bay side to Buzzards Bay on the south. Thus it cuts off a number of miles of the present route from eastern points to Long Island Sound and New York and also will allow vessels to escape the most perilous part of the journey. Peaked Hill Bar, Pollock Rip and Handkerchief Shoals, Monomoy and other terrors of the navigator will be avoided.

It has been figured from a careful series of observations of the tides, that the maximum flow of water through the canal will not exceed three miles per hour and that it will seldom reach even this amount. The reason for such a flow is found in the difference of time of high water in Massachusetts Bay and Buzzards Bay.

The Canal will parallel the tracks of the New York, New Haven & Hartford R. R. throughout its length and it is believed that intine this route will become the scene of big industrial and manufacturing development. The New Haven Road is now planning a daily all-water route service from Boston to New York via the Cape Cod Canal when it shall be completed.

THE TECH

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Through an oversight, the Semi-Centennial Issue published yesterday, was labelled No. 129. The issue was a special issue and should not have received a number. The article entitled "The First Congress of Technology" was written by E. B. Moore, and "The Alumni Reunion" was contributed by R. H. Ranger. These stories should have been attributed to their authors.

The Semi-Centennial Celebration is now in full swing. The alumni are back in crowds, and all Tech men both graduates and undergraduates are uniting in the spirit of technical education, scientific investigation, industrial development, improved Technology, and good fellowship. The undergraduates seem to be taking as active a part in the celebration as could be hoped for, especially in the way of good fellowship, but they should not neglect the more serious opportunities of the occasion. The papers to be given to-morrow have very conveniently been divided into five sections to accommodate the students most handily. Every student is expected to attend some of these lectures and should not fail to take advantage of the opportunity. It is the chance of a lifetime and should be seized by every student here. Choose the section most valuable to you and "listen and learn."

NEW YORK STATE

CLUB DINNER

The members of the New York State Club, spent a most enjoyable evening last Thursday at their meeting and dinner at the Hotel Plaza.

Good fellowship reigned supreme and all present pronounced the meeting a social success.

It was decided that the last meeting of the year be held on May 4th. All men from the Empire State, should keep this date open as it will be one big night and the officers for next year will be elected.

TRIUMPHAL TOUR OF

"TECH" TEAM

Inkslinger's Base Ball Squad show Great Form in Exhibition Work

The Tech's special train pulled in here early this morning from Fort Wirth in the midst of a driving storm of confetti and rocks. They put up at the Brewster and directly after lunch, they went to working out for their game tonight. They are all in the best of condition with only two cases of "glass arm" and a fast "charley horse" on the squad. The workout was a revelation to the people here and they began to shove up the odds on The Tech till there were no takers. The game tonight will follow immediately after the theatre under the light of some very strong arc-lights. This will be an eye-opener for this place for the night games in the past have been held under difficulties so far as the lighting is concerned, with most of the dependence placed on the moon or the footlights.

They will put on the same line-up that has been played in all the recent games and are intending to put in a number of heaters before the game is over. It seems that they are carrying a big bunch of men and they can change their men without any trouble. They are looking for blood and there will be trouble when they start their season in the Back Bay. There is a big crowd of fans here to greet them on their first appearance in the town and they will have this crowd behind them in the game for they took the city by storm this afternoon when they were practising before a large number of the sporting men at Brewster.

Directly after the game they leave for (the) Lombardy where they will play their next exhibition game. That will in all probability be a hard game for them, they will save their men today as much as possible with that end in view. The Lombardy team is said to be very "classy" and there will be a number of the players from the Technique team on hand to watch this game and get a line on the kind of game that they are playing and just what sort of ball they may expect to get when they line-up against The Tech on the opening game of the season. The manager has telegraphed that he has settled all the details for the use of the grounds and that they are to be under the same terms as were made a year ago. He said that they were in the best of shape but that Bill, the genial groundskeeper, was working hard to keep them up so that the first game may be played on grounds that will be just as fast as they would be at the other end of the season. Everything points to a record breaking crowd at the big game and there seems to be no doubt as to which team will win in the manager's mind. He is unwilling at this time to give out any dope on the men who are playing the positions on his team for there will be a great change before the team gets back home and so wants none of the line-ups given out. This will be good-bye to Brewster and off again towards home.

SPRING CONCERT

Applications will be filed according as the full amount is paid. No reservations will be held after Wednesday, (130-21).

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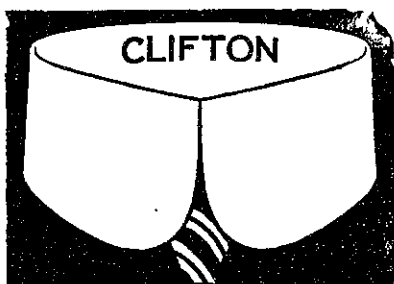
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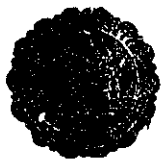
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COMMUNICATION

The Tech:

The report given you of the results
of election for officers of E. E. Society
was inaccurate. Bond and Lawler tied
for Treasurer. This tie will be decided by
a new ballot next week.

Very truly yours,
Sydney Alling,
Chairman of E. E.
Society Election Com.

TECH WANTS ADS PAY.

That little classified ad we put in the
paper Saturday did bring some results!
So many applicants for the position of
Catcher on our base-ball team came a-
round Saturday afternoon that it kept
poor Mgr. Harold busy all afternoon
trying out the candidates in the lower
office. We might also add that some of
the material was of very high class.

WARNING

The persons holding seats P 13-18
for the Winter Concert had better con-
sult with the management.

(130-††).

TECHNIQUE RUSH TICKETS

OUT NEXT WEEK

Alumni given Opportunity to Obtain
Books today. Obtain Tickets in
Union from 1 until 2 Every day
Next Week.

Now that the singing up is progressing
rapidly, the Technique Board wishes
to call the attention of the undergraduates
to the fact that next week all those who
wish to pay in full for their Techniques
or who wish to pay the balance due from
their deposits may receive rush tickets
at the Union from 1 until 2 every day.
These rush tickets entitle the holder to a
copy of Technique and must be obtained
before he will be allowed a book. There-
fore the sooner that these tickets are in
your possession the better it will facilitate
matters. Call around at the Union
early next week and make sure of one or
as many as you want.

The rush will be held on the Oval on
Irvington Street at 1.20 o'clock, April
eighteenth. From present indications it
is going to be a very popular way to give
vent to the effervescent feeling which
comes over a man in the Spring, so plan
now to enter the struggle for the best
Technique ever published by an Institute
class.

The Alumni are to be allowed an oppor-
tunity to obtain books today, so that
it is up to every man who really wants
a 1912 Technique to get his signature
on a slip as soon as possible. Don't
forget that the sheepskin in covered editio
is the richest appearing volume ever, and
will satisfy the most fastidious. Moral:
Get Busy.

E. E. SOCIETY ELECTS OFFICERS

At a meeting of the Electrical Engineer-
ing Society yesterday afternoon, I. L.
Barry, 3d was elected President for next
year, H. D. Kemp was elected Vice-
President, H. M. Foley Secretary and
T. D. Bond Treasurer. For several of
the officers voting was extremely close.

FIELD DAY CONTINUED

please ask at the information office, for
we couldn't find it any place.

The next thing was a five act comedy
during which the Hammer-throwers beat
the "used to be's" to a frazzle. It was
a red-hot game for fair but the cold west
wind, that the poets (don't) write about,
helped a whole lot to cool the ardor of the
ball-tossers but at the same time, the
pitchers couldn't let themselves out at all.
This, however, didn't seem necessary
for there were no runs at all during the
first few innings.

The game thus turned into a pitcher's
battle in which Hartford had a little
the better of the argument, for Glaze
was uncertain in his control and used but
little speed. 1913 went out in 1, 2, 3,
order, Eicher making a wonderful stop
of Mahoney's hard driver. Their oppon-
ents followed suit a couple of them fanning
The second inning was the same for '13
but in their half '14 got a man around
as far as second, but he was put out by
a sharp throw from Murdock while trying
to make third. Another sleepy inning
followed and then the track manager
wanted the field for the relay race.

Fifteen minutes sufficed to run off this
event during which the ball players
evidently spirited up, for they started
in to play ball in earnest after the inter-
mission. Errors put Lawrence, Sampson
and Brewer on base and then Hartford
brought home the bacon by a beauty
which nearly took a plank out of the left
field fence.

1914 showed that they were some
stickers for in their half, Odell got a
good clout. He got to second reached
third on an out and then got home when
Murdock threw wild to Mahoney in
an attempt to catch him napping. Parker
was fouled out and Glaze popped to the
catcher, who caught the ball while lying
on his back.

Glaze pitched heady deliberate ball,
but the number of sweaters he had on
detracted somewhat from his control
Eicher showed up very well in the field
and had he gotten on the bases would
probably have done some more stellar
work. For '13 Murdock hit very well
though he was erratic in his fielding.
Hartford pitched a fine game, and did
very well at bat. Sampson and Capen
also played well. Both outfields played
an errorless game, though they had but
few chances.

Pearl's umpiring helped considerably
in making the game interesting to the
spectators.

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LANGUAGE

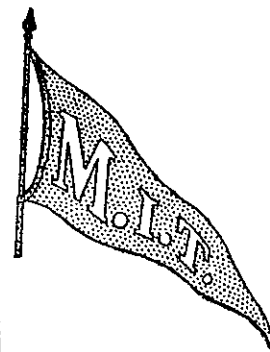
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describe that "distinctly dif-
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GRAND SMOKER

LAST NIGHT

Technology's Hosts gather in Sym-
phony Hall en masse

PRES. MACLAURIN PRESENT

Many Stunts pulled off Institute Activ-
ities Figure Prominently.

At the Smoker of the Technology Congress at the Symphony Hall last night, the enthusiasm of a thousand loyal Tech men burst forth and the evening was one hilarious good time. The floor and balconies filled up early and many of the earlier classes distinguished themselves by the uniqueness and oddity of their entering stunts. In particular might be mentioned the enthusiast who persisted in crowing proudly "Seventy-four, seventy-four". Cheer followed cheer, and the spirits of the assembled hosts of Technology well demonstrated the traditionary Tech spirit.

The opening number of the evening's program was a selection by the Institute's orchestra. The applause following the playing was deafening and Leader Eksurgon then led his orchestra through an encore. The encore was also vociferously received.

Following the orchestra, Messrs. Thompson and White repeated their already famous duet from the Chocolate Soldiers' Minstrel. The number was very well received.

Cheering and music predominated throughout the intermissions between the numbers of the program.

Kebbon 1912, then sang the success of the season, "Any Little Site". Mr. O. B. Denison, 1911, assisted Mr. Kebbons at the piano. Mr. Kebbon's efforts were applauded to the echo.

The orchestra then gave another selection and this time a longer encore was necessitated by the applauding demands. The orchestra in conjunction with the Glee Club, rendered "Our Technology", the new Tech Song.

O. B. Denison gave his inimitable pianologue, "The Mill Wheel is Turning in the Belfry."

Then the stereopticon threw upon the screen, a series of pictures of the men prominent in the development of the Institute. Much laughter and jollity was thereby generated.

A boxing match, which turned into a prize-fight, then ensued between Baxter 1913, and Katzenberger, 1913. After three slashing rounds, the bout terminated in a draw.

The final number was the exhibition of motion pictures of things of interest that happened in the Institute. Then the Waltham Watch Company orchestra played the final march and the vast throng of Tech men reluctantly left the room, after the singing of the "Stein Song".

TECHNOLOGY NUMBER

OF ADVANCE NEW ENGLAND

Chamber of Commerce Magazine
Devoted entirely to the Work
of the Institut.

The April issue of "Advance New England" the monthly magazine published by the Boston Chamber of Commerce is sure to prove of vital interest to every student and graduate of Tech. It is devoted entirely to articles on the Institute all written by Tech men. The striking feature of this, however, is that each of the writers is a member of the Boston Chamber of Commerce. The cover of the number is tastefully decorated in red and gray and is illustrated with a picture of Rogers Building.

The reasons, as stated in an editorial why an entire number of the Chamber of Commerce journal should be given up to Technology becomes clear when one considers what the Institutions stand for. The Chamber of Commerce stands for the upbuilding of the industrial community and Technology plays an important part in this upbuilding on account of the training which its students receive in learning to cope with the many technical problems which enter into all the many branches of the trade and industry of the present. In the articles contained in the issue many of the ways in which the Institute serves the industrial world will be enumerated. The following are the contents of the "Technology number":

"The Fiftieth Anniversary of Massachusetts Institute of Technology"—Walter B. Snow.

"The New Technology"—Frederic H. Fay.

"Technology and the Public Health"—C. E. A. Winslow.

"The Research Laboratory at the Massachusetts Institute of Technology"—Alan A. Clavin.

"The Institute and Industrial Education"—James P. Munroe.

"Scientific Method and Business"—Russell Robb.

"Facts, Figures and Features", A Statistical Account of the Personnel of M. I. T.—Roger W. Babson.

Every guest at the banquet tonight will be presented with a copy and if any students desire to purchase it, they may obtain copies at the Cage.

LARGE CROWD EXPECTED

IN NIGHT SHIRT PARADE

Everybody who owns a night shirt or pair of pajamas is invited to be at the Union tonight at 7.30 properly dressed for a night shirt parade. This is sure to be a big time and seniors juniors and sophomores and freshmen should all turn out to make the Institute's first night shirt parade a complete success.

Lost: In Library Wednesday a note book containing Organic Chemistry notes Finder will kindly leave at Cage for F. W. Barker Jr.

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SPRING CONCERT

TICKETS ON SALE

Between one and two They May be
Obtained—Number Limited

Did you see the long line waiting in the Union, yesterday for tickets to the Spring Concert? Reserved seats were put on sale Monday noon and the management reproed a brisk sale. Applications for seats will be filled as soon as the fur amount is paid. No seats will be held after 2 P. M. on Wednesday, and from then until Saturday, tickets will be sold to the general public between 1 and 2 P. M. daily. After Saturday tickets can be procured only at the concert. The management has decided to limit the number of tickets to four hundred, thus insuring plenty of room for dancing. The concert will be the "best ever" with new songs and new music. Copley Hall will be prettily decorated with greens and Tech banners. Pooles Orchestra will furnish a number of excellent selections from 10—1 The concert begins at 8 o'clock sharp.

CALENDAR

Send all notices for calendar to E. W. Taft 1913 Institute Committee at the Cage.

Wednesday, April 12.

4.15—1913 and 1914 Cross Country Practice—Field.

4.15—1913 Baseball Practice—Field.

6.30—Joint Dinner of Prof. Soc.—Union.

Thursday, April 13.

4.15—1913 and 1914 Cross Country Practice—Field.

4.15—1914 Baseball Practice—Field.

5.00—Technique Board Mrg.—Union.

4.15—Combined Musical Clubs Practise—H. H.

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